

Classified  
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: NEO-RAY

Report Number: P78475

Luminaire Tested: **DFN2DIP-RG3F0-060D050US940-FLL-FLL-1DUDD-W**

Issue Date: 02/20/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P78475  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 02/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-RG3F0-060D050US940-FLL-FLL-1DUDD-W  
Description: Define Geo Ring 3ft Diameter Direct/Indirect Fixture w/ Frosted Lens  
Light Source: 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

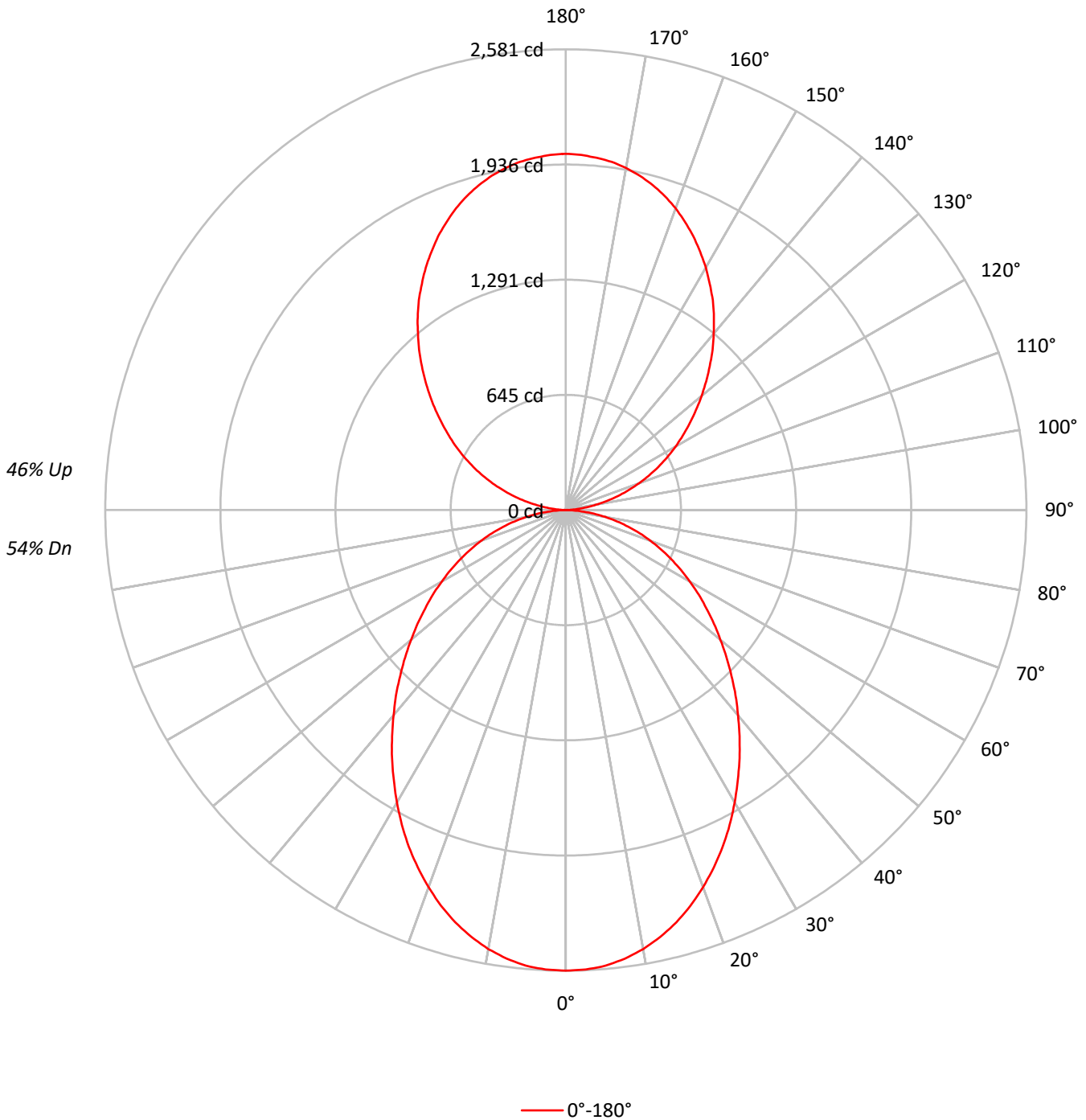
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10946.0 lumens  
Efficiency: N/A  
Efficacy: 83.9 lumens/watt  
Spacing Criteria (0/90/45): 1.11 / 1.11 / 1.21  
Luminous Opening: Circular (Dia: 3' x H: 0')  
CIE Type: General Diffuse

Input Watts (W): 130.5  
Input Voltage (V): 120  
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: 25 FT

TEST NUMBER: P78475  
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### Luminous Intensity Polar Plot





TEST NUMBER: P78475

CATALOG NUMBER: DFN2DIP-RG3F0-060D050US940-FLL-FLL-1DUDD-W

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    |    |
| RC  | 80  |     |     |     | 70  |     |     |     | 50 |    |    |    | 30 |    |    |    | 10 |    |    | 0  |    |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0  |
| RCR |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 86 | 86 | 86 | 72 | 72 | 72 | 60 | 60 | 60 | 54 |    |    | 54 |
| 1   | 99  | 95  | 91  | 87  | 92  | 88  | 84  | 81  | 75 | 73 | 71 | 64 | 62 | 60 | 53 | 52 | 51 | 46 |    |    | 46 |
| 2   | 90  | 83  | 77  | 71  | 83  | 77  | 72  | 67  | 66 | 62 | 59 | 56 | 53 | 51 | 47 | 45 | 43 | 39 |    |    | 39 |
| 3   | 82  | 73  | 66  | 60  | 76  | 68  | 61  | 56  | 59 | 54 | 50 | 50 | 46 | 43 | 42 | 39 | 37 | 33 |    |    | 33 |
| 4   | 75  | 65  | 57  | 51  | 70  | 60  | 53  | 48  | 52 | 47 | 42 | 45 | 40 | 37 | 38 | 34 | 32 | 28 |    |    | 28 |
| 5   | 69  | 58  | 50  | 44  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 40 | 36 | 32 | 34 | 31 | 28 | 25 |    |    | 25 |
| 6   | 64  | 52  | 44  | 38  | 59  | 49  | 41  | 36  | 42 | 37 | 32 | 36 | 32 | 28 | 31 | 27 | 25 | 22 |    |    | 22 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 32  | 38 | 33 | 29 | 33 | 29 | 25 | 28 | 25 | 22 | 20 |    |    | 20 |
| 8   | 55  | 43  | 35  | 30  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 30 | 26 | 23 | 26 | 23 | 20 | 18 |    |    | 18 |
| 9   | 51  | 39  | 32  | 27  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 24 | 21 | 18 | 16 |    |    | 16 |
| 10  | 48  | 36  | 29  | 24  | 45  | 34  | 27  | 23  | 30 | 24 | 21 | 26 | 22 | 19 | 22 | 19 | 16 | 15 |    |    | 15 |

**AVERAGE LUMINANCE (cd/sqm):**

|     |      |
|-----|------|
|     | 0°   |
| 0°  | 3930 |
| 5°  | 3918 |
| 10° | 3863 |
| 15° | 3771 |
| 20° | 3643 |
| 25° | 3497 |
| 30° | 3327 |
| 35° | 3156 |
| 40° | 2983 |
| 45° | 2825 |
| 50° | 2679 |
| 55° | 2553 |
| 60° | 2444 |
| 65° | 2346 |
| 70° | 2251 |
| 75° | 2129 |
| 80° | 1984 |
| 85° | 1546 |



TEST NUMBER: P78475  
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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 242.5   | 2.2       |
| 10°-20°   | 672.4   | 6.1       |
| 20°-30°   | 956.5   | 8.7       |
| 30°-40°   | 1061.1  | 9.7       |
| 40°-50°   | 1014.0  | 9.3       |
| 50°-60°   | 863.0   | 7.9       |
| 60°-70°   | 646.1   | 5.9       |
| 70°-80°   | 384.4   | 3.5       |
| 80°-90°   | 106.9   | 1.0       |
| 90°-100°  | 80.8    | 0.7       |
| 100°-110° | 319.1   | 2.9       |
| 110°-120° | 566.1   | 5.2       |
| 120°-130° | 759.1   | 6.9       |
| 130°-140° | 880.6   | 8.0       |
| 140°-150° | 896.4   | 8.2       |
| 150°-160° | 778.3   | 7.1       |
| 160°-170° | 530.7   | 4.8       |
| 170°-180° | 188.0   | 1.7       |
| 0°-30°    | 1871.4  | 17.1      |
| 0°-40°    | 2932.5  | 26.8      |
| 0°-60°    | 4809.5  | 43.9      |
| 0°-90°    | 5946.9  | 54.3      |
| 90°-120°  | 966.0   | 8.8       |
| 90°-150°  | 3502.0  | 32.0      |
| 90°-180°  | 4999.0  | 45.7      |
| 0°-180°   | 10946.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | Flux |
|------|------|------|
| 0°   | 2581 |      |
| 5°   | 2563 | 243  |
| 15°  | 2392 | 672  |
| 25°  | 2081 | 956  |
| 35°  | 1698 | 1061 |
| 45°  | 1312 | 1014 |
| 55°  | 962  | 863  |
| 65°  | 651  | 646  |
| 75°  | 362  | 384  |
| 85°  | 88   | 102  |
| 90°  | 2    | 9    |
| 95°  | 66   | 77   |
| 105° | 302  | 319  |
| 115° | 572  | 566  |
| 125° | 848  | 759  |
| 135° | 1141 | 881  |
| 145° | 1436 | 896  |
| 155° | 1692 | 778  |
| 165° | 1884 | 531  |
| 175° | 1981 | 188  |
| 180° | 1996 |      |



TEST NUMBER: P78475

CATALOG NUMBER: DFN2DIP-RG3F0-060D050US940-FLL-FLL-1DUDD-W

**CANDELA DISTRIBUTION (FULL):**

| 0°     |        |
|--------|--------|
| 0°     | 2580.6 |
| 2.5°   | 2576.7 |
| 5°     | 2562.9 |
| 7.5°   | 2535.4 |
| 10°    | 2498.0 |
| 12.5°  | 2448.8 |
| 15°    | 2391.8 |
| 17.5°  | 2324.9 |
| 20°    | 2248.2 |
| 22.5°  | 2167.6 |
| 25°    | 2081.0 |
| 27.5°  | 1988.6 |
| 30°    | 1892.2 |
| 32.5°  | 1793.8 |
| 35°    | 1697.5 |
| 37.5°  | 1599.1 |
| 40°    | 1500.8 |
| 42.5°  | 1408.3 |
| 45°    | 1311.9 |
| 47.5°  | 1221.5 |
| 50°    | 1131.0 |
| 52.5°  | 1046.4 |
| 55°    | 961.8  |
| 57.5°  | 885.1  |
| 60°    | 802.5  |
| 62.5°  | 727.8  |
| 65°    | 651.1  |
| 67.5°  | 578.3  |
| 70°    | 505.5  |
| 72.5°  | 434.7  |
| 75°    | 361.9  |
| 77.5°  | 295.0  |
| 80°    | 226.2  |
| 82.5°  | 157.4  |
| 85°    | 88.5   |
| 87.5°  | 33.4   |
| 90°    | 1.5    |
| 92.5°  | 27.9   |
| 95°    | 66.0   |
| 97.5°  | 115.8  |
| 100°   | 173.0  |
| 102.5° | 236.1  |
| 105°   | 302.1  |
| 107.5° | 368.0  |
| 110°   | 435.5  |



TEST NUMBER: P78475  
CATALOG NUMBER: DFN2DIP-RG3F0-060D050US940-FLL-FLL-1DUDD-W

**CANDELA DISTRIBUTION (continued):**

|        | 0°     |
|--------|--------|
| 112.5° | 502.9  |
| 115°   | 571.8  |
| 117.5° | 640.8  |
| 120°   | 709.7  |
| 122.5° | 777.1  |
| 125°   | 847.5  |
| 127.5° | 919.4  |
| 130°   | 992.7  |
| 132.5° | 1066.0 |
| 135°   | 1140.8 |
| 137.5° | 1217.0 |
| 140°   | 1288.9 |
| 142.5° | 1363.6 |
| 145°   | 1435.5 |
| 147.5° | 1501.5 |
| 150°   | 1568.9 |
| 152.5° | 1630.5 |
| 155°   | 1692.1 |
| 157.5° | 1746.3 |
| 160°   | 1799.1 |
| 162.5° | 1844.6 |
| 165°   | 1884.2 |
| 167.5° | 1917.9 |
| 170°   | 1945.7 |
| 172.5° | 1967.7 |
| 175°   | 1980.9 |
| 177.5° | 1991.2 |
| 180°   | 1995.6 |

Signify Classified - Internal  
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

NEO-RAY

Report Number: SP1-2401-290-4

Test Date: 01/19/2024

Luminaire Tested: RNG2DIP-RG2F0-020D020US940-FLL-FLL-1-D-UDD-W

Data in this report applies to families of products including RNG2DIP-RG2F0-020D020US940-FLL-FLL-1-D-UDD-W.



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2401-290-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 01/19/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: NEO-RAY  
 Catalog Number: **RNG2DIP-RG2F0-020D020US940-FLL-FLL-1-D-UDD-W**  
 Description: 2' RING DIRECT/INDIRECT FIXTURE WITH FROSTED LIGHT LEVEL 1

**Spectral Parameters**

CCT (K): 3758  
 CIE u': 0.2291  
 CIE v': 0.5077  
 Duv: 0.0012  
 CIE x: 0.3927  
 CIE y: 0.3866  
 CIE z: 0.2207  
 Peak Wavelength (nm): 622  
 Dominant Wavelength (nm): 579  
 Purity: 34

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 94.5 |      |      |
| R1:       | 96.0 | R9:  | 76.6 |
| R2:       | 99.4 | R10: | 97.1 |
| R3:       | 98.5 | R11: | 92.7 |
| R4:       | 91.3 | R12: | 73.3 |
| R5:       | 93.7 | R13: | 97.5 |
| R6:       | 96.5 | R14: | 99.6 |
| R7:       | 92.4 |      |      |
| R8:       | 88.3 |      |      |

Rf: 89  
 Rg: 95.5

**Test Conditions**

Stabilization Time: 24M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.6/27%  
 Sphere Temperature (°C): 25.0

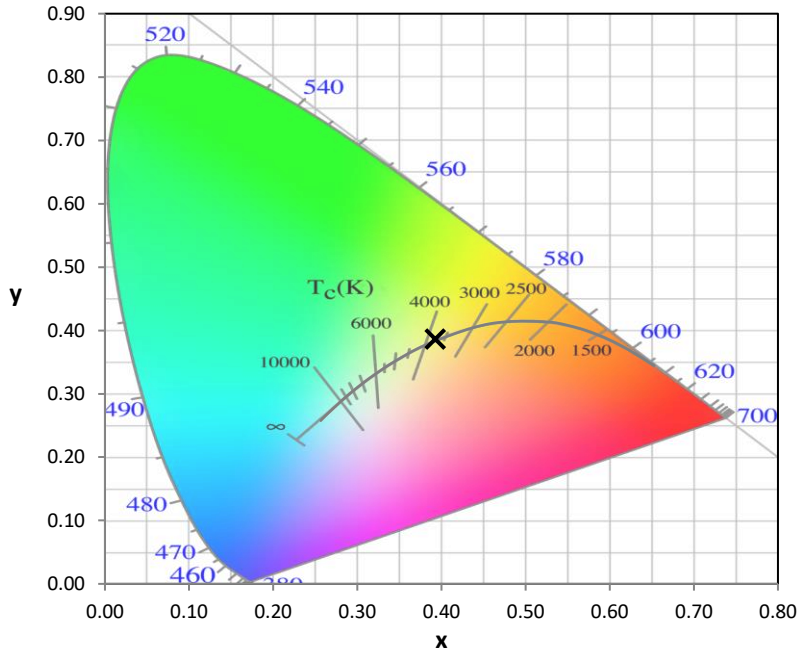


REPORT NUMBER: SP1-2401-290-4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 8/9/2023         | 2/9/2024             |
| Power Meter                    | XITRON 2801 IN0071    | 10/23/2023       | 10/23/2024           |
| AC Power Source                | CHROMA 61603 IN0063   | 10/24/2023       | 10/24/2024           |
| DC Power Source                | AGILENT E3634A IN0208 | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | ONSET IN0085          | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | ONSET IN0046          | 10/24/2023       | 10/24/2024           |

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CIE 1931 Chromaticity Diagram



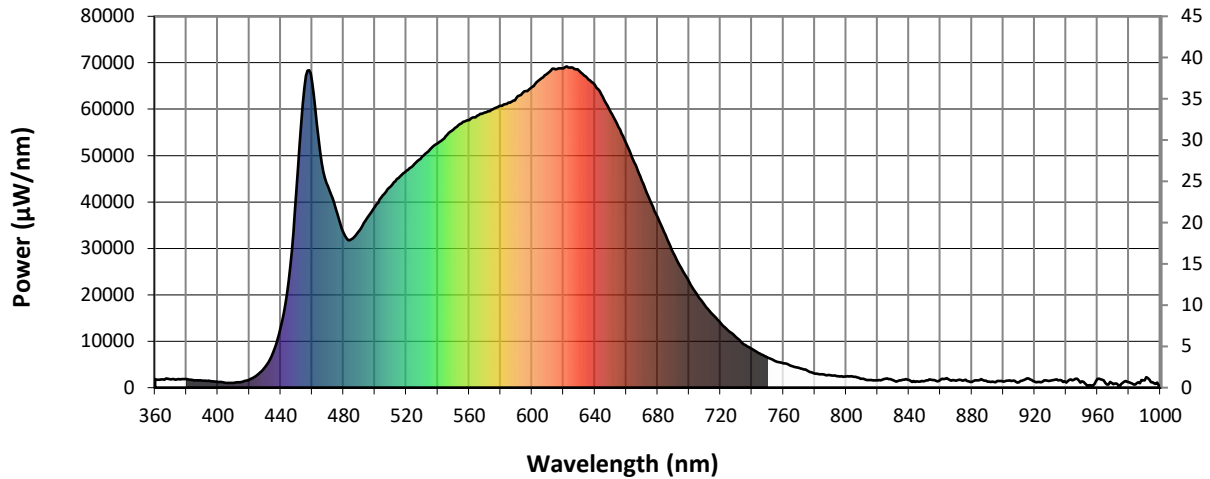
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 7-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1835          | NR            | 490    | 33863         | NR            | 620    | 68794         | NR            | 750    | 6489          | NR            | 880    | 1195          | NR            |
| 365    | 1756          | NR            | 495    | 36543         | NR            | 625    | 68963         | NR            | 755    | 5711          | NR            | 885    | 1624          | NR            |
| 370    | 1802          | NR            | 500    | 39024         | NR            | 630    | 68221         | NR            | 760    | 5217          | NR            | 890    | 1275          | NR            |
| 375    | 1845          | NR            | 505    | 41399         | NR            | 635    | 66761         | NR            | 765    | 4671          | NR            | 895    | 1184          | NR            |
| 380    | 1842          | NR            | 510    | 43372         | NR            | 640    | 65207         | NR            | 770    | 4277          | NR            | 900    | 1288          | NR            |
| 385    | 1553          | NR            | 515    | 45125         | NR            | 645    | 62607         | NR            | 775    | 3684          | NR            | 905    | 1449          | NR            |
| 390    | 1519          | NR            | 520    | 46728         | NR            | 650    | 59420         | NR            | 780    | 3015          | NR            | 910    | 1184          | NR            |
| 395    | 1452          | NR            | 525    | 48116         | NR            | 655    | 56103         | NR            | 785    | 2857          | NR            | 915    | 1999          | NR            |
| 400    | 1256          | NR            | 530    | 49751         | NR            | 660    | 52566         | NR            | 790    | 2657          | NR            | 920    | 1299          | NR            |
| 405    | 1033          | NR            | 535    | 51317         | NR            | 665    | 48489         | NR            | 795    | 2474          | NR            | 925    | 1312          | NR            |
| 410    | 1023          | NR            | 540    | 52637         | NR            | 670    | 44555         | NR            | 800    | 2413          | NR            | 930    | 1526          | NR            |
| 415    | 1228          | NR            | 545    | 54148         | NR            | 675    | 40405         | NR            | 805    | 2307          | NR            | 935    | 1577          | NR            |
| 420    | 1723          | NR            | 550    | 55654         | NR            | 680    | 36707         | NR            | 810    | 1935          | NR            | 940    | 1108          | NR            |
| 425    | 2748          | NR            | 555    | 56944         | NR            | 685    | 32841         | NR            | 815    | 1648          | NR            | 945    | 1728          | NR            |
| 430    | 4401          | NR            | 560    | 57653         | NR            | 690    | 29037         | NR            | 820    | 1582          | NR            | 950    | 1356          | NR            |
| 435    | 7516          | NR            | 565    | 58559         | NR            | 695    | 25745         | NR            | 825    | 1937          | NR            | 955    | 564           | NR            |
| 440    | 12984         | NR            | 570    | 59300         | NR            | 700    | 22850         | NR            | 830    | 1558          | NR            | 960    | 1914          | NR            |
| 445    | 22972         | NR            | 575    | 59941         | NR            | 705    | 20102         | NR            | 835    | 1584          | NR            | 965    | 994           | NR            |
| 450    | 42364         | NR            | 580    | 60752         | NR            | 710    | 17680         | NR            | 840    | 1621          | NR            | 970    | 757           | NR            |
| 455    | 64528         | NR            | 585    | 61417         | NR            | 715    | 15746         | NR            | 845    | 1333          | NR            | 975    | 758           | NR            |
| 460    | 65971         | NR            | 590    | 62430         | NR            | 720    | 13934         | NR            | 850    | 1406          | NR            | 980    | 1163          | NR            |
| 465    | 51026         | NR            | 595    | 63801         | NR            | 725    | 12285         | NR            | 855    | 1655          | NR            | 985    | 952           | NR            |
| 470    | 43331         | NR            | 600    | 64806         | NR            | 730    | 10834         | NR            | 860    | 1737          | NR            | 990    | 1604          | NR            |
| 475    | 38626         | NR            | 605    | 66352         | NR            | 735    | 9292          | NR            | 865    | 1841          | NR            | 995    | 1145          | NR            |
| 480    | 33315         | NR            | 610    | 67770         | NR            | 740    | 8312          | NR            | 870    | 1490          | NR            | 1000   | 0             | NR            |
| 485    | 31961         | NR            | 615    | 68560         | NR            | 745    | 7359          | NR            | 875    | 1559          | NR            |        |               |               |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 7174.5

S/P: 1.77

| 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    | 1835          | NR            | 490    | 33863         | NR            | 620    | 68794         | NR            | 750    | 6489          | NR            | 880    | 1195          | NR            |
| 365    | 1756          | NR            | 495    | 36543         | NR            | 625    | 68963         | NR            | 755    | 5711          | NR            | 885    | 1624          | NR            |
| 370    | 1802          | NR            | 500    | 39024         | NR            | 630    | 68221         | NR            | 760    | 5217          | NR            | 890    | 1275          | NR            |
| 375    | 1845          | NR            | 505    | 41399         | NR            | 635    | 66761         | NR            | 765    | 4671          | NR            | 895    | 1184          | NR            |
| 380    | 1842          | NR            | 510    | 43372         | NR            | 640    | 65207         | NR            | 770    | 4277          | NR            | 900    | 1288          | NR            |
| 385    | 1553          | NR            | 515    | 45125         | NR            | 645    | 62607         | NR            | 775    | 3684          | NR            | 905    | 1449          | NR            |
| 390    | 1519          | NR            | 520    | 46728         | NR            | 650    | 59420         | NR            | 780    | 3015          | NR            | 910    | 1184          | NR            |
| 395    | 1452          | NR            | 525    | 48116         | NR            | 655    | 56103         | NR            | 785    | 2857          | NR            | 915    | 1999          | NR            |
| 400    | 1256          | NR            | 530    | 49751         | NR            | 660    | 52566         | NR            | 790    | 2657          | NR            | 920    | 1299          | NR            |
| 405    | 1033          | NR            | 535    | 51317         | NR            | 665    | 48489         | NR            | 795    | 2474          | NR            | 925    | 1312          | NR            |
| 410    | 1023          | NR            | 540    | 52637         | NR            | 670    | 44555         | NR            | 800    | 2413          | NR            | 930    | 1526          | NR            |
| 415    | 1228          | NR            | 545    | 54148         | NR            | 675    | 40405         | NR            | 805    | 2307          | NR            | 935    | 1577          | NR            |
| 420    | 1723          | NR            | 550    | 55654         | NR            | 680    | 36707         | NR            | 810    | 1935          | NR            | 940    | 1108          | NR            |
| 425    | 2748          | NR            | 555    | 56944         | NR            | 685    | 32841         | NR            | 815    | 1648          | NR            | 945    | 1728          | NR            |
| 430    | 4401          | NR            | 560    | 57653         | NR            | 690    | 29037         | NR            | 820    | 1582          | NR            | 950    | 1356          | NR            |
| 435    | 7516          | NR            | 565    | 58559         | NR            | 695    | 25745         | NR            | 825    | 1937          | NR            | 955    | 564           | NR            |
| 440    | 12984         | NR            | 570    | 59300         | NR            | 700    | 22850         | NR            | 830    | 1558          | NR            | 960    | 1914          | NR            |
| 445    | 22972         | NR            | 575    | 59941         | NR            | 705    | 20102         | NR            | 835    | 1584          | NR            | 965    | 994           | NR            |
| 450    | 42364         | NR            | 580    | 60752         | NR            | 710    | 17680         | NR            | 840    | 1621          | NR            | 970    | 757           | NR            |
| 455    | 64528         | NR            | 585    | 61417         | NR            | 715    | 15746         | NR            | 845    | 1333          | NR            | 975    | 758           | NR            |
| 460    | 65971         | NR            | 590    | 62430         | NR            | 720    | 13934         | NR            | 850    | 1406          | NR            | 980    | 1163          | NR            |
| 465    | 51026         | NR            | 595    | 63801         | NR            | 725    | 12285         | NR            | 855    | 1655          | NR            | 985    | 952           | NR            |
| 470    | 43331         | NR            | 600    | 64806         | NR            | 730    | 10834         | NR            | 860    | 1737          | NR            | 990    | 1604          | NR            |
| 475    | 38626         | NR            | 605    | 66352         | NR            | 735    | 9292          | NR            | 865    | 1841          | NR            | 995    | 1145          | NR            |
| 480    | 33315         | NR            | 610    | 67770         | NR            | 740    | 8312          | NR            | 870    | 1490          | NR            | 1000   | 0             | NR            |
| 485    | 31961         | NR            | 615    | 68560         | NR            | 745    | 7359          | NR            | 875    | 1559          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 2971.3 M/P: 0.73**

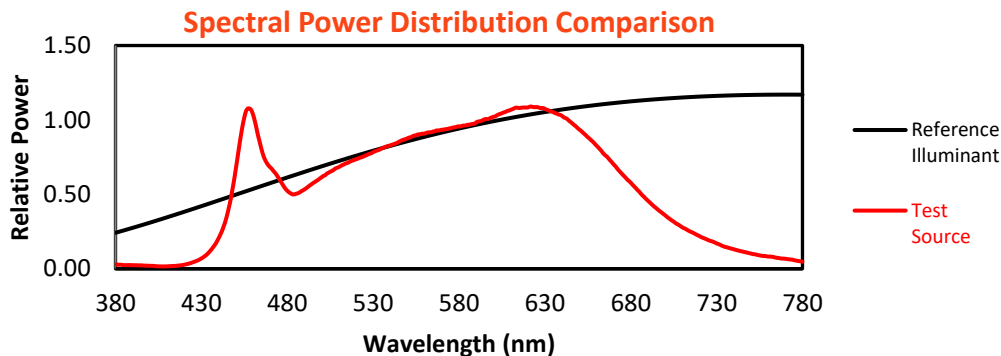
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1835          | NR            | 490    | 33863         | NR            | 620    | 68794         | NR            | 750    | 6489          | NR            | 880    | 1195          | NR            |
| 365    | 1756          | NR            | 495    | 36543         | NR            | 625    | 68963         | NR            | 755    | 5711          | NR            | 885    | 1624          | NR            |
| 370    | 1802          | NR            | 500    | 39024         | NR            | 630    | 68221         | NR            | 760    | 5217          | NR            | 890    | 1275          | NR            |
| 375    | 1845          | NR            | 505    | 41399         | NR            | 635    | 66761         | NR            | 765    | 4671          | NR            | 895    | 1184          | NR            |
| 380    | 1842          | NR            | 510    | 43372         | NR            | 640    | 65207         | NR            | 770    | 4277          | NR            | 900    | 1288          | NR            |
| 385    | 1553          | NR            | 515    | 45125         | NR            | 645    | 62607         | NR            | 775    | 3684          | NR            | 905    | 1449          | NR            |
| 390    | 1519          | NR            | 520    | 46728         | NR            | 650    | 59420         | NR            | 780    | 3015          | NR            | 910    | 1184          | NR            |
| 395    | 1452          | NR            | 525    | 48116         | NR            | 655    | 56103         | NR            | 785    | 2857          | NR            | 915    | 1999          | NR            |
| 400    | 1256          | NR            | 530    | 49751         | NR            | 660    | 52566         | NR            | 790    | 2657          | NR            | 920    | 1299          | NR            |
| 405    | 1033          | NR            | 535    | 51317         | NR            | 665    | 48489         | NR            | 795    | 2474          | NR            | 925    | 1312          | NR            |
| 410    | 1023          | NR            | 540    | 52637         | NR            | 670    | 44555         | NR            | 800    | 2413          | NR            | 930    | 1526          | NR            |
| 415    | 1228          | NR            | 545    | 54148         | NR            | 675    | 40405         | NR            | 805    | 2307          | NR            | 935    | 1577          | NR            |
| 420    | 1723          | NR            | 550    | 55654         | NR            | 680    | 36707         | NR            | 810    | 1935          | NR            | 940    | 1108          | NR            |
| 425    | 2748          | NR            | 555    | 56944         | NR            | 685    | 32841         | NR            | 815    | 1648          | NR            | 945    | 1728          | NR            |
| 430    | 4401          | NR            | 560    | 57653         | NR            | 690    | 29037         | NR            | 820    | 1582          | NR            | 950    | 1356          | NR            |
| 435    | 7516          | NR            | 565    | 58559         | NR            | 695    | 25745         | NR            | 825    | 1937          | NR            | 955    | 564           | NR            |
| 440    | 12984         | NR            | 570    | 59300         | NR            | 700    | 22850         | NR            | 830    | 1558          | NR            | 960    | 1914          | NR            |
| 445    | 22972         | NR            | 575    | 59941         | NR            | 705    | 20102         | NR            | 835    | 1584          | NR            | 965    | 994           | NR            |
| 450    | 42364         | NR            | 580    | 60752         | NR            | 710    | 17680         | NR            | 840    | 1621          | NR            | 970    | 757           | NR            |
| 455    | 64528         | NR            | 585    | 61417         | NR            | 715    | 15746         | NR            | 845    | 1333          | NR            | 975    | 758           | NR            |
| 460    | 65971         | NR            | 590    | 62430         | NR            | 720    | 13934         | NR            | 850    | 1406          | NR            | 980    | 1163          | NR            |
| 465    | 51026         | NR            | 595    | 63801         | NR            | 725    | 12285         | NR            | 855    | 1655          | NR            | 985    | 952           | NR            |
| 470    | 43331         | NR            | 600    | 64806         | NR            | 730    | 10834         | NR            | 860    | 1737          | NR            | 990    | 1604          | NR            |
| 475    | 38626         | NR            | 605    | 66352         | NR            | 735    | 9292          | NR            | 865    | 1841          | NR            | 995    | 1145          | NR            |
| 480    | 33315         | NR            | 610    | 67770         | NR            | 740    | 8312          | NR            | 870    | 1490          | NR            | 1000   | 0             | NR            |
| 485    | 31961         | NR            | 615    | 68560         | NR            | 745    | 7359          | NR            | 875    | 1559          | NR            |        |               |               |

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**Summary**

$R_f = 89$   
 $R_g = 95.5$   
 CIE  $R_a = 94.5$   
 $R_9 = 76.6$



**Color Vector Graphics**

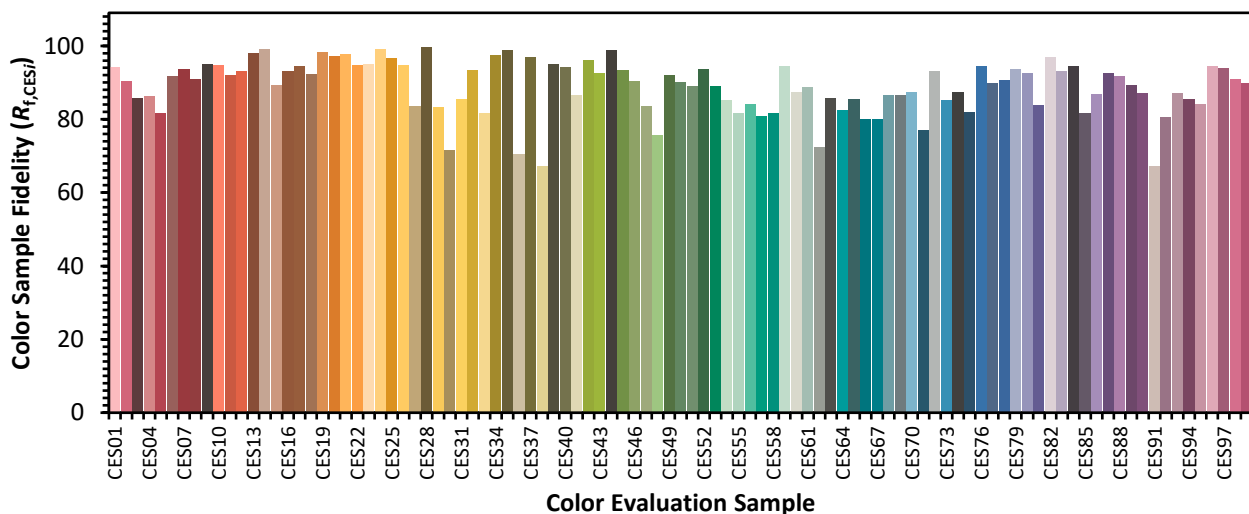


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 86 | CES26 = 95  | CES51 = 89 | CES76 = 94 |
| CES02 = 62 | CES27 = 84  | CES52 = 94 | CES77 = 90 |
| CES03 = 31 | CES28 = 100 | CES53 = 89 | CES78 = 91 |
| CES04 = 69 | CES29 = 83  | CES54 = 85 | CES79 = 94 |
| CES05 = 49 | CES30 = 71  | CES55 = 82 | CES80 = 93 |
| CES06 = 51 | CES31 = 85  | CES56 = 84 | CES81 = 84 |
| CES07 = 42 | CES32 = 93  | CES57 = 81 | CES82 = 97 |
| CES08 = 41 | CES33 = 82  | CES58 = 82 | CES83 = 93 |
| CES09 = 29 | CES34 = 97  | CES59 = 95 | CES84 = 94 |
| CES10 = 74 | CES35 = 99  | CES60 = 87 | CES85 = 82 |
| CES11 = 57 | CES36 = 70  | CES61 = 89 | CES86 = 87 |
| CES12 = 63 | CES37 = 97  | CES62 = 72 | CES87 = 93 |
| CES13 = 43 | CES38 = 67  | CES63 = 86 | CES88 = 92 |
| CES14 = 74 | CES39 = 95  | CES64 = 82 | CES89 = 89 |
| CES15 = 71 | CES40 = 94  | CES65 = 86 | CES90 = 87 |
| CES16 = 47 | CES41 = 87  | CES66 = 80 | CES91 = 67 |
| CES17 = 49 | CES42 = 96  | CES67 = 80 | CES92 = 81 |
| CES18 = 56 | CES43 = 93  | CES68 = 86 | CES93 = 87 |
| CES19 = 71 | CES44 = 99  | CES69 = 87 | CES94 = 86 |
| CES20 = 66 | CES45 = 93  | CES70 = 87 | CES95 = 84 |
| CES21 = 85 | CES46 = 90  | CES71 = 77 | CES96 = 95 |
| CES22 = 78 | CES47 = 84  | CES72 = 93 | CES97 = 94 |
| CES23 = 91 | CES48 = 76  | CES73 = 85 | CES98 = 91 |
| CES24 = 90 | CES49 = 92  | CES74 = 87 | CES99 = 90 |
| CES25 = 71 | CES50 = 90  | CES75 = 82 |            |





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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)