

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: P78302

Luminaire Tested: **DFN2DIP-RG3F0-090D090US940-FLL-OOB-1DUDD-W**

Issue Date: 02/20/2024

Test Information

Test Method: LM-79-08
Report Number: P78302
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-RG3F0-090D090US940-FLL-OOB-1DUDD-W
Description: Define Geo Ring 3ft Diameter Direct/Indirect Fixture w/ Frosted Lens
for Downlight and Bat-Wing Lens for UPLIGHT
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

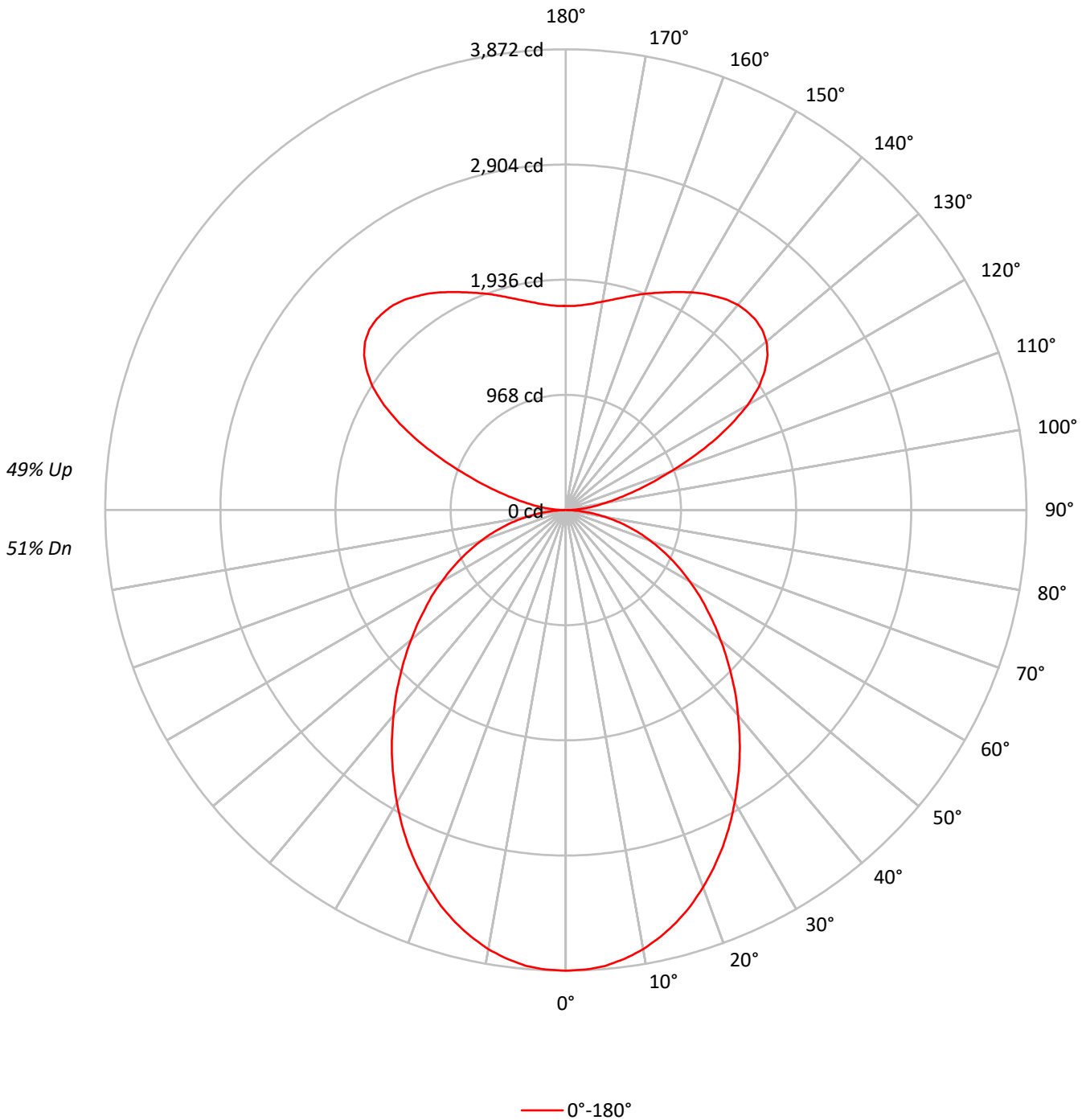
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17625.5 lumens
Efficiency: N/A
Efficacy: 69.7 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): 253
Input Voltage (V): 120
Input Current (A_{in}): 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: P78302
CATALOG NUMBER: DFN2DIP-RG3F0-090D090US940-FLL-OOB-1DUDD-W

Luminous Intensity Polar Plot





TEST NUMBER: P78302

CATALOG NUMBER: DFN2DIP-RG3F0-090D090US940-FLL-OOB-1DUDD-W

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|----|
| RF | 20 | | | | | | | | | 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 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | | | | | | | | | | | | | | | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 84 | 84 | 84 | 70 | 70 | 70 | 57 | 57 | 57 | 51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 98 | 94 | 90 | 86 | 90 | 87 | 83 | 80 | 73 | 71 | 69 | 61 | 60 | 58 | 50 | 49 | 48 | 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 89 | 82 | 76 | 71 | 82 | 76 | 71 | 66 | 65 | 61 | 57 | 54 | 51 | 49 | 44 | 42 | 41 | 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 82 | 72 | 65 | 59 | 75 | 67 | 61 | 55 | 57 | 52 | 48 | 48 | 44 | 41 | 39 | 37 | 35 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 75 | 64 | 56 | 50 | 69 | 59 | 53 | 47 | 51 | 46 | 41 | 43 | 39 | 36 | 35 | 32 | 30 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 69 | 57 | 49 | 43 | 63 | 53 | 46 | 41 | 46 | 40 | 36 | 39 | 34 | 31 | 32 | 29 | 26 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 63 | 51 | 43 | 38 | 58 | 48 | 41 | 35 | 41 | 36 | 31 | 35 | 31 | 27 | 29 | 26 | 23 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 59 | 46 | 39 | 33 | 54 | 43 | 36 | 31 | 37 | 32 | 28 | 32 | 27 | 24 | 27 | 23 | 21 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 54 | 42 | 35 | 29 | 50 | 39 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 25 | 21 | 19 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 51 | 39 | 31 | 26 | 47 | 36 | 29 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 23 | 19 | 17 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 47 | 35 | 28 | 23 | 44 | 33 | 27 | 22 | 29 | 24 | 20 | 25 | 21 | 18 | 21 | 18 | 15 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | |
|-----|------|
| | 0° |
| 0° | 5896 |
| 5° | 5878 |
| 10° | 5795 |
| 15° | 5657 |
| 20° | 5466 |
| 25° | 5246 |
| 30° | 4992 |
| 35° | 4734 |
| 40° | 4476 |
| 45° | 4239 |
| 50° | 4020 |
| 55° | 3831 |
| 60° | 3667 |
| 65° | 3520 |
| 70° | 3377 |
| 75° | 3195 |
| 80° | 2976 |
| 85° | 2320 |



TEST NUMBER: P78302
 CATALOG NUMBER: DFN2DIP-RG3F0-090D090US940-FLL-OOB-1DUDD-W

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 363.9 | 2.1 |
| 10°-20° | 1008.8 | 5.7 |
| 20°-30° | 1435.0 | 8.1 |
| 30°-40° | 1592.0 | 9.0 |
| 40°-50° | 1521.4 | 8.6 |
| 50°-60° | 1294.8 | 7.3 |
| 60°-70° | 969.3 | 5.5 |
| 70°-80° | 576.7 | 3.3 |
| 80°-90° | 161.2 | 0.9 |
| 90°-100° | 173.2 | 1.0 |
| 100°-110° | 631.3 | 3.6 |
| 110°-120° | 1340.4 | 7.6 |
| 120°-130° | 1809.9 | 10.3 |
| 130°-140° | 1739.3 | 9.9 |
| 140°-150° | 1377.0 | 7.8 |
| 150°-160° | 937.7 | 5.3 |
| 160°-170° | 527.0 | 3.0 |
| 170°-180° | 166.7 | 0.9 |
| 0°-30° | 2807.7 | 15.9 |
| 0°-40° | 4399.7 | 25.0 |
| 0°-60° | 7215.9 | 40.9 |
| 0°-90° | 8923.1 | 50.6 |
| 90°-120° | 2144.9 | 12.2 |
| 90°-150° | 7071.1 | 40.1 |
| 90°-180° | 8702.0 | 49.4 |
| 0°-180° | 17625.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | Flux |
|------|------|------|
| 0° | 3872 | |
| 5° | 3845 | 364 |
| 15° | 3588 | 1009 |
| 25° | 3122 | 1435 |
| 35° | 2547 | 1592 |
| 45° | 1968 | 1521 |
| 55° | 1443 | 1295 |
| 65° | 977 | 969 |
| 75° | 543 | 577 |
| 85° | 133 | 153 |
| 90° | 8 | 20 |
| 95° | 155 | 161 |
| 105° | 581 | 631 |
| 115° | 1363 | 1340 |
| 125° | 2042 | 1810 |
| 135° | 2259 | 1739 |
| 145° | 2192 | 1377 |
| 155° | 2019 | 938 |
| 165° | 1848 | 527 |
| 175° | 1730 | 167 |
| 180° | 1714 | |



TEST NUMBER: P78302

CATALOG NUMBER: DFN2DIP-RG3F0-090D090US940-FLL-OOB-1DUDD-W

CANDELA DISTRIBUTION (FULL):

| 0° | |
|--------|--------|
| 0° | 3871.8 |
| 2.5° | 3865.9 |
| 5° | 3845.2 |
| 7.5° | 3803.9 |
| 10° | 3747.8 |
| 12.5° | 3674.1 |
| 15° | 3588.5 |
| 17.5° | 3488.2 |
| 20° | 3373.1 |
| 22.5° | 3252.1 |
| 25° | 3122.2 |
| 27.5° | 2983.5 |
| 30° | 2838.9 |
| 32.5° | 2691.4 |
| 35° | 2546.8 |
| 37.5° | 2399.2 |
| 40° | 2251.7 |
| 42.5° | 2113.0 |
| 45° | 1968.4 |
| 47.5° | 1832.6 |
| 50° | 1696.9 |
| 52.5° | 1570.0 |
| 55° | 1443.1 |
| 57.5° | 1328.0 |
| 60° | 1204.0 |
| 62.5° | 1091.9 |
| 65° | 976.8 |
| 67.5° | 867.6 |
| 70° | 758.4 |
| 72.5° | 652.2 |
| 75° | 543.0 |
| 77.5° | 442.7 |
| 80° | 339.4 |
| 82.5° | 236.1 |
| 85° | 132.8 |
| 87.5° | 50.2 |
| 90° | 7.7 |
| 92.5° | 77.5 |
| 95° | 154.9 |
| 97.5° | 234.9 |
| 100° | 330.5 |
| 102.5° | 441.5 |
| 105° | 580.9 |
| 107.5° | 743.5 |
| 110° | 929.4 |



TEST NUMBER: P78302
CATALOG NUMBER: DFN2DIP-RG3F0-090D090US940-FLL-OOB-1DUDD-W

CANDELA DISTRIBUTION (continued):

| | 0° |
|--------|--------|
| 112.5° | 1141.1 |
| 115° | 1363.2 |
| 117.5° | 1572.3 |
| 120° | 1763.3 |
| 122.5° | 1923.4 |
| 125° | 2042.1 |
| 127.5° | 2137.7 |
| 130° | 2202.2 |
| 132.5° | 2240.9 |
| 135° | 2259.0 |
| 137.5° | 2259.0 |
| 140° | 2251.3 |
| 142.5° | 2228.0 |
| 145° | 2191.9 |
| 147.5° | 2155.7 |
| 150° | 2111.9 |
| 152.5° | 2065.4 |
| 155° | 2018.9 |
| 157.5° | 1975.0 |
| 160° | 1933.7 |
| 162.5° | 1889.8 |
| 165° | 1848.5 |
| 167.5° | 1809.8 |
| 170° | 1778.8 |
| 172.5° | 1750.4 |
| 175° | 1729.8 |
| 177.5° | 1716.8 |
| 180° | 1714.3 |

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 |

REPORT NUMBER: SP1-2401-290-4

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

REPORT NUMBER: SP1-2401-290-4

Photopic Flux vs. Wavelength



#####

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | 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 | | | |

REPORT NUMBER: SP1-2401-290-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 7174.5

S/P: 1.77

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | 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 | | | |

REPORT NUMBER: SP1-2401-290-4

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 | | | |

REPORT NUMBER: SP1-2401-290-4

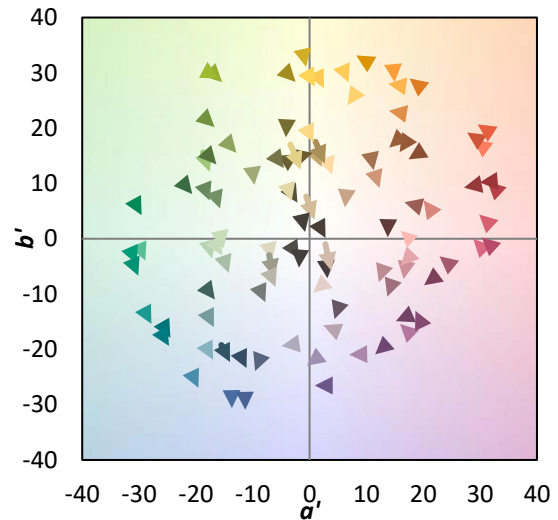
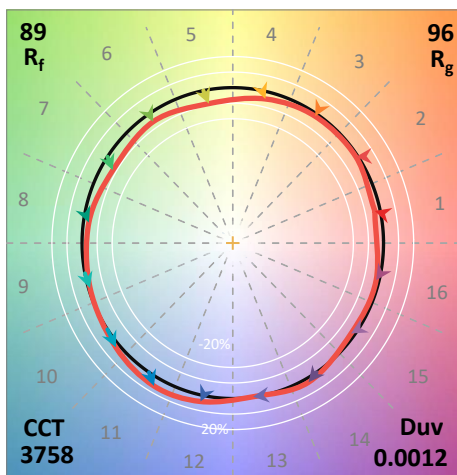
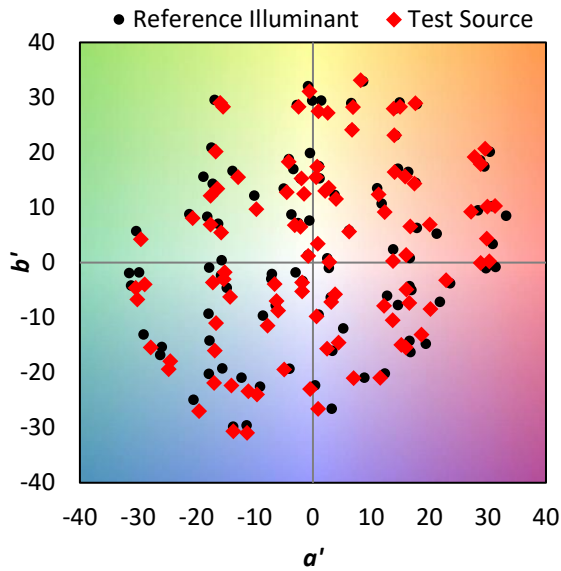
TM-30-18

Summary

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



Color Vector Graphics



REPORT NUMBER: SP1-2401-290-4

TM-30-18

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 | |



REPORT NUMBER: SP1-2401-290-4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-2401-290-4

TM-30-18

Measure Comparisons



(END OF REPORT)