

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P931558

Luminaire Tested: DFN2DS-TR4F0-100DS850-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931558  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333882)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-TR4F0-100DS850-RLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

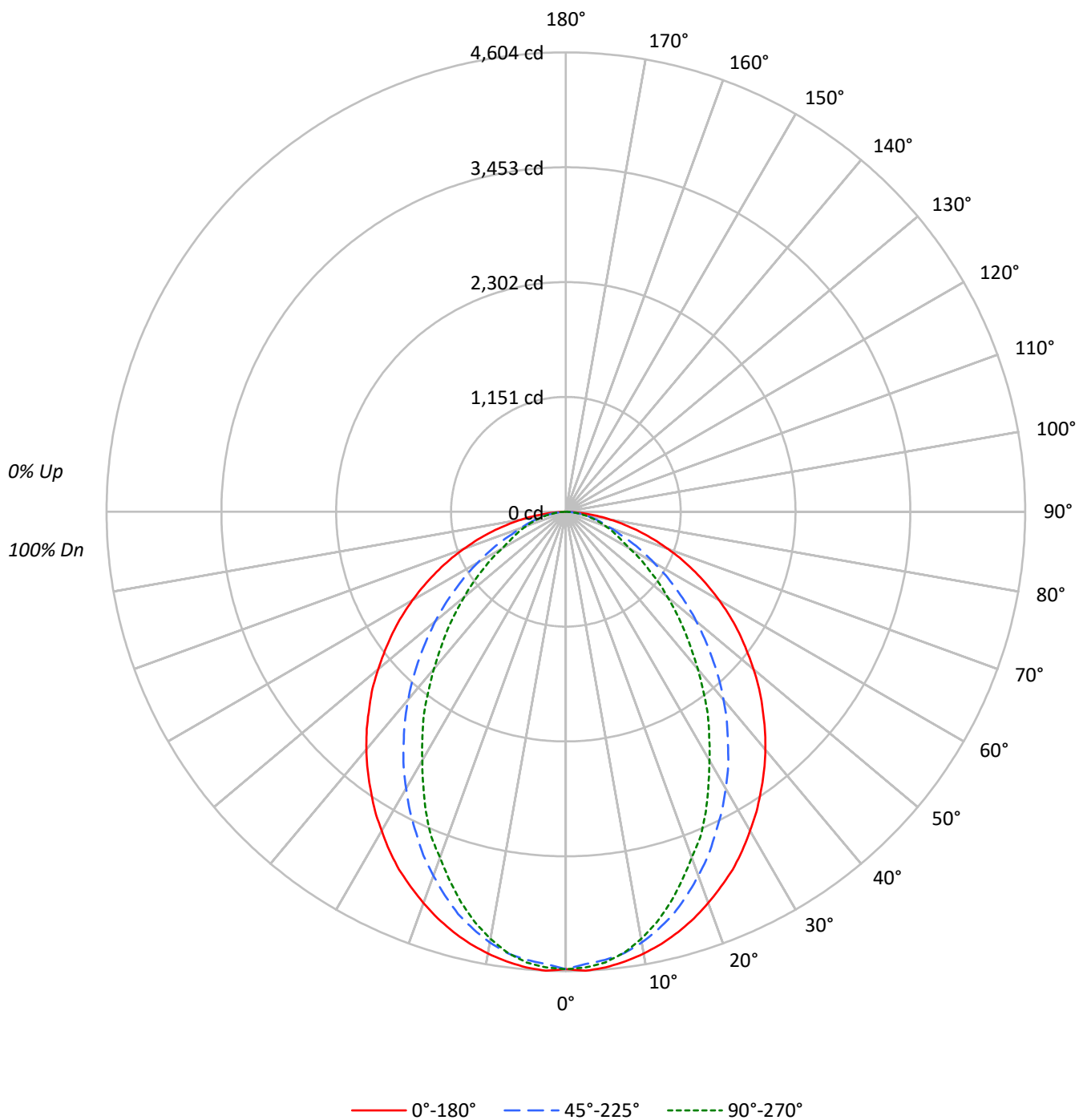
Lumens per Lamp: N/A  
Luminaire Lumens: 9426.5 lumens  
Efficiency: N/A  
Efficacy: 87.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.96' x L: 3.43' x H: 0')  
CIE Type: Direct

Input Watts (W): 107.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot



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

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 10  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 |
| 1   | 110 | 106 | 102 | 98  | 107 | 103 | 100 | 97  | 99  | 96  | 94  |  | 95  | 93  | 91  |  | 92  |
| 2   | 101 | 94  | 87  | 82  | 98  | 92  | 86  | 81  | 88  | 83  | 79  |  | 85  | 81  | 78  |  | 82  |
| 3   | 93  | 83  | 76  | 70  | 90  | 82  | 75  | 69  | 79  | 73  | 68  |  | 76  | 71  | 67  |  | 74  |
| 4   | 86  | 75  | 66  | 60  | 83  | 73  | 66  | 60  | 71  | 64  | 59  |  | 69  | 63  | 58  |  | 66  |
| 5   | 79  | 67  | 59  | 53  | 77  | 66  | 58  | 52  | 64  | 57  | 52  |  | 62  | 56  | 51  |  | 60  |
| 6   | 74  | 61  | 53  | 47  | 72  | 60  | 52  | 46  | 58  | 51  | 46  |  | 57  | 50  | 46  |  | 55  |
| 7   | 68  | 56  | 47  | 42  | 67  | 55  | 47  | 42  | 53  | 46  | 41  |  | 52  | 46  | 41  |  | 51  |
| 8   | 64  | 51  | 43  | 38  | 62  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 42  | 37  |  | 47  |
| 9   | 60  | 47  | 39  | 34  | 59  | 47  | 39  | 34  | 46  | 39  | 34  |  | 44  | 38  | 34  |  | 44  |
| 10  | 56  | 44  | 36  | 31  | 55  | 43  | 36  | 31  | 42  | 36  | 31  |  | 41  | 35  | 31  |  | 41  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3641 | 3641 | 3641 |
| 5°  | 3655 | 3595 | 3615 |
| 10° | 3627 | 3537 | 3507 |
| 15° | 3586 | 3432 | 3333 |
| 20° | 3528 | 3282 | 3117 |
| 25° | 3469 | 3112 | 2909 |
| 30° | 3387 | 2937 | 2641 |
| 35° | 3307 | 2748 | 2405 |
| 40° | 3226 | 2551 | 2134 |
| 45° | 3132 | 2330 | 1887 |
| 50° | 3035 | 2107 | 1646 |
| 55° | 2935 | 1867 | 1413 |
| 60° | 2821 | 1615 | 1173 |
| 65° | 2690 | 1357 | 1068 |
| 70° | 2534 | 1117 | 983  |
| 75° | 2342 | 1018 | 917  |
| 80° | 2067 | 910  | 836  |
| 85° | 1624 | 717  | 717  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3132 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 429.6  | 4.6       |
| 10°-20°   | 1179.3 | 12.5      |
| 20°-30°   | 1655.6 | 17.6      |
| 30°-40°   | 1804.7 | 19.1      |
| 40°-50°   | 1658.8 | 17.6      |
| 50°-60°   | 1302.7 | 13.8      |
| 60°-70°   | 847.9  | 9.0       |
| 70°-80°   | 436.5  | 4.6       |
| 80°-90°   | 111.4  | 1.2       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 3264.5 | 34.6      |
| 0°-40°    | 5069.2 | 53.8      |
| 0°-60°    | 8030.6 | 85.2      |
| 0°-90°    | 9426.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9426.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4584 | 4584  | 4584 | 4584  | 4584 |      |
| 5°  | 4584 | 4563  | 4509 | 4546  | 4534 | 435  |
| 15° | 4360 | 4314  | 4173 | 4094  | 4053 | 1228 |
| 25° | 3957 | 3824  | 3551 | 3381  | 3318 | 1820 |
| 35° | 3410 | 3198  | 2833 | 2572  | 2480 | 2134 |
| 45° | 2788 | 2509  | 2074 | 1779  | 1680 | 2153 |
| 55° | 2119 | 1796  | 1348 | 1099  | 1020 | 1894 |
| 65° | 1431 | 1095  | 722  | 581   | 568  | 1419 |
| 75° | 763  | 473   | 332  | 303   | 299  | 807  |
| 85° | 178  | 91    | 79   | 79    | 79   | 214  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4583.5 | 4583.5 | 4583.5 | 4583.5 | 4583.5 |
| 2.5°  | 4604.1 | 4583.5 | 4537.7 | 4579.5 | 4571.2 |
| 5°    | 4583.5 | 4562.8 | 4508.6 | 4546.1 | 4533.7 |
| 7.5°  | 4546.1 | 4521.4 | 4463.3 | 4479.6 | 4459.0 |
| 10°   | 4496.3 | 4467.3 | 4384.5 | 4371.8 | 4347.2 |
| 12.5° | 4434.3 | 4396.9 | 4284.6 | 4260.0 | 4214.2 |
| 15°   | 4359.5 | 4313.7 | 4172.8 | 4094.1 | 4052.7 |
| 17.5° | 4272.3 | 4205.9 | 4031.7 | 3940.5 | 3874.1 |
| 20°   | 4172.8 | 4089.7 | 3882.4 | 3779.0 | 3687.4 |
| 22.5° | 4065.0 | 3969.6 | 3728.8 | 3588.1 | 3526.0 |
| 25°   | 3957.2 | 3824.4 | 3550.6 | 3380.7 | 3318.2 |
| 27.5° | 3828.7 | 3687.4 | 3384.7 | 3189.7 | 3094.2 |
| 30°   | 3691.9 | 3533.8 | 3202.0 | 2990.9 | 2878.6 |
| 32.5° | 3559.0 | 3367.9 | 3028.2 | 2779.2 | 2675.2 |
| 35°   | 3409.7 | 3198.1 | 2833.3 | 2571.9 | 2480.3 |
| 37.5° | 3264.6 | 3036.1 | 2650.6 | 2364.2 | 2260.7 |
| 40°   | 3111.0 | 2862.3 | 2459.7 | 2165.2 | 2057.4 |
| 42.5° | 2953.4 | 2688.0 | 2269.1 | 1961.9 | 1858.5 |
| 45°   | 2787.5 | 2509.3 | 2074.2 | 1779.3 | 1679.8 |
| 47.5° | 2630.0 | 2335.6 | 1887.5 | 1592.6 | 1501.6 |
| 50°   | 2455.7 | 2161.2 | 1704.9 | 1418.4 | 1331.7 |
| 52.5° | 2285.3 | 1974.2 | 1530.6 | 1256.8 | 1178.1 |
| 55°   | 2119.4 | 1796.0 | 1348.0 | 1099.4 | 1020.5 |
| 57.5° | 1949.6 | 1617.7 | 1186.5 | 954.1  | 887.6  |
| 60°   | 1775.3 | 1443.5 | 1016.2 | 804.9  | 738.5  |
| 62.5° | 1605.4 | 1273.6 | 870.9  | 672.1  | 639.0  |
| 65°   | 1431.2 | 1094.9 | 721.7  | 580.9  | 568.1  |
| 67.5° | 1265.3 | 929.0  | 580.9  | 510.0  | 497.7  |
| 70°   | 1090.9 | 767.5  | 481.0  | 439.6  | 423.0  |
| 72.5° | 925.0  | 617.8  | 402.2  | 369.2  | 360.9  |
| 75°   | 763.1  | 472.7  | 331.8  | 302.8  | 298.8  |
| 77.5° | 601.6  | 335.8  | 261.4  | 244.6  | 236.3  |
| 80°   | 451.9  | 240.8  | 199.0  | 182.7  | 182.7  |
| 82.5° | 315.1  | 161.9  | 136.9  | 128.5  | 128.5  |
| 85°   | 178.2  | 91.0   | 78.7   | 78.7   | 78.7   |
| 87.5° | 66.4   | 33.0   | 33.0   | 29.1   | 29.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 15.72            | 17.25 | 16.09 | 17.56 | 17.87 | 11.69          | 13.21 | 12.05 | 13.52 | 13.84 |
|                 | 3H   | 17.49            | 18.86 | 17.87 | 19.18 | 19.54 | 12.95          | 14.32 | 13.33 | 14.64 | 15.01 |
|                 | 4H   | 18.16            | 19.44 | 18.56 | 19.79 | 20.16 | 13.45          | 14.73 | 13.85 | 15.08 | 15.46 |
|                 | 6H   | 18.65            | 19.83 | 19.06 | 20.19 | 20.59 | 13.83          | 15.02 | 14.25 | 15.38 | 15.77 |
|                 | 8H   | 18.81            | 19.94 | 19.24 | 20.33 | 20.73 | 13.96          | 15.08 | 14.38 | 15.47 | 15.87 |
|                 | 12H  | 18.91            | 19.99 | 19.34 | 20.37 | 20.80 | 14.04          | 15.12 | 14.47 | 15.50 | 15.93 |
| 4H              | 2H   | 15.83            | 17.11 | 16.23 | 17.46 | 17.84 | 12.38          | 13.66 | 12.78 | 14.01 | 14.39 |
|                 | 3H   | 17.76            | 18.82 | 18.17 | 19.22 | 19.63 | 13.82          | 14.89 | 14.23 | 15.29 | 15.69 |
|                 | 4H   | 18.51            | 19.47 | 18.94 | 19.88 | 20.32 | 14.42          | 15.38 | 14.86 | 15.80 | 16.23 |
|                 | 6H   | 19.10            | 19.94 | 19.56 | 20.38 | 20.84 | 14.91          | 15.74 | 15.37 | 16.19 | 16.65 |
|                 | 8H   | 19.32            | 20.09 | 19.78 | 20.54 | 21.01 | 15.07          | 15.85 | 15.54 | 16.29 | 16.76 |
|                 | 12H  | 19.47            | 20.17 | 19.95 | 20.64 | 21.11 | 15.19          | 15.89 | 15.67 | 16.36 | 16.83 |
| 8H              | 4H   | 18.54            | 19.31 | 19.00 | 19.76 | 20.22 | 14.78          | 15.55 | 15.24 | 16.00 | 16.47 |
|                 | 6H   | 19.17            | 19.82 | 19.67 | 20.31 | 20.78 | 15.36          | 16.01 | 15.86 | 16.50 | 16.97 |
|                 | 8H   | 19.42            | 20.00 | 19.94 | 20.51 | 21.00 | 15.58          | 16.16 | 16.10 | 16.67 | 17.16 |
|                 | 12H  | 19.63            | 20.14 | 20.14 | 20.63 | 21.19 | 15.76          | 16.27 | 16.27 | 16.77 | 17.33 |
| 12H             | 4H   | 18.52            | 19.21 | 19.00 | 19.69 | 20.16 | 14.82          | 15.51 | 15.30 | 15.99 | 16.46 |
|                 | 6H   | 19.15            | 19.73 | 19.67 | 20.24 | 20.73 | 15.43          | 16.00 | 15.94 | 16.51 | 17.00 |
|                 | 8H   | 19.44            | 19.95 | 19.95 | 20.44 | 21.00 | 15.70          | 16.21 | 16.21 | 16.70 | 17.27 |