

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: P931043

Luminaire Tested: DFN2DS-SQ3F0-110DS940-FLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P931043  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333812)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-SQ3F0-110DS940-FLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

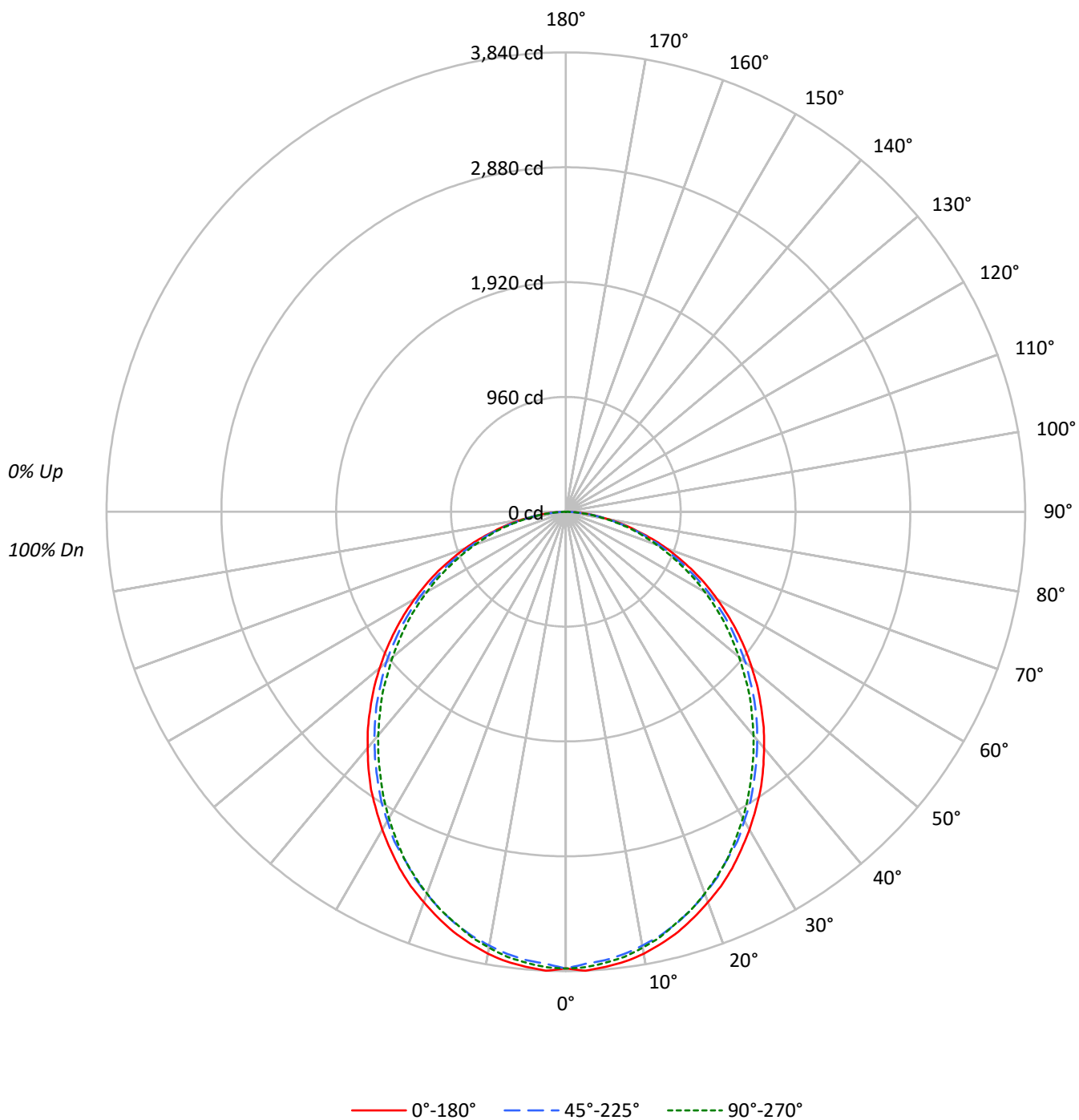
Lumens per Lamp: N/A  
Luminaire Lumens: 9713.9 lumens  
Efficiency: N/A  
Efficacy: 82.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 3.06' x L: 3.06' x H: 0')  
CIE Type: Direct

Input Watts (W): 117.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
Total Harmonic Distortion (THDi): 0.049  
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   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  |  | 94  | 91  | 89  |  | 90  |
| 2   | 99  | 91  | 85  | 79  | 97  | 89  | 83  | 78  | 86  | 81  | 76  |  | 83  | 78  | 74  |  | 80  |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  |  | 73  | 68  | 63  |  | 71  |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  |  | 65  | 59  | 54  |  | 63  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 53  | 48  |  | 59  | 52  | 47  |  | 57  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 48  | 42  |  | 53  | 47  | 42  |  | 52  |
| 7   | 66  | 52  | 44  | 38  | 64  | 52  | 43  | 38  | 50  | 43  | 37  |  | 49  | 42  | 37  |  | 47  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 33  |  | 45  | 38  | 33  |  | 44  |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  |  | 41  | 35  | 30  |  | 40  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 27  |  | 38  | 32  | 27  |  | 37  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4375 | 4375 | 4375 |
| 5°  | 4391 | 4328 | 4354 |
| 10° | 4365 | 4284 | 4306 |
| 15° | 4311 | 4229 | 4224 |
| 20° | 4235 | 4145 | 4141 |
| 25° | 4159 | 4043 | 4043 |
| 30° | 4061 | 3949 | 3915 |
| 35° | 3970 | 3836 | 3779 |
| 40° | 3855 | 3723 | 3652 |
| 45° | 3742 | 3611 | 3522 |
| 50° | 3619 | 3494 | 3370 |
| 55° | 3491 | 3359 | 3235 |
| 60° | 3348 | 3197 | 3079 |
| 65° | 3195 | 3036 | 2897 |
| 70° | 3001 | 2841 | 2706 |
| 75° | 2730 | 2616 | 2552 |
| 80° | 2424 | 2349 | 2228 |
| 85° | 1977 | 1884 | 1689 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3742 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 359.3  | 3.7       |
| 10°-20°   | 1011.1 | 10.4      |
| 20°-30°   | 1485.8 | 15.3      |
| 30°-40°   | 1725.7 | 17.8      |
| 40°-50°   | 1723.6 | 17.7      |
| 50°-60°   | 1502.9 | 15.5      |
| 60°-70°   | 1111.0 | 11.4      |
| 70°-80°   | 628.6  | 6.5       |
| 80°-90°   | 165.9  | 1.7       |
| 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°    | 2856.2 | 29.4      |
| 0°-40°    | 4582.0 | 47.2      |
| 0°-60°    | 7808.4 | 80.4      |
| 0°-90°    | 9713.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9713.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3818 | 3818  | 3818 | 3818  | 3818 |      |
| 5°  | 3818 | 3804  | 3763 | 3792  | 3785 | 362  |
| 15° | 3634 | 3613  | 3565 | 3580  | 3561 | 1024 |
| 25° | 3289 | 3260  | 3198 | 3205  | 3198 | 1514 |
| 35° | 2838 | 2801  | 2742 | 2720  | 2702 | 1772 |
| 45° | 2309 | 2284  | 2228 | 2188  | 2173 | 1782 |
| 55° | 1748 | 1726  | 1682 | 1637  | 1619 | 1563 |
| 65° | 1179 | 1156  | 1120 | 1087  | 1068 | 1165 |
| 75° | 617  | 610   | 591  | 569   | 576  | 658  |
| 85° | 150  | 147   | 143  | 132   | 128  | 177  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3817.9 | 3817.9 | 3817.9 | 3817.9 | 3817.9 |
| 2.5°  | 3840.1 | 3821.8 | 3781.3 | 3817.9 | 3810.9 |
| 5°    | 3817.9 | 3803.5 | 3763.0 | 3792.2 | 3785.2 |
| 7.5°  | 3792.2 | 3770.4 | 3729.9 | 3759.5 | 3752.1 |
| 10°   | 3752.1 | 3726.3 | 3682.4 | 3711.5 | 3700.6 |
| 12.5° | 3696.8 | 3675.0 | 3631.0 | 3649.3 | 3641.9 |
| 15°   | 3634.5 | 3612.6 | 3564.7 | 3579.5 | 3561.2 |
| 17.5° | 3557.3 | 3535.5 | 3487.6 | 3505.9 | 3487.6 |
| 20°   | 3472.8 | 3451.0 | 3399.6 | 3410.5 | 3396.1 |
| 22.5° | 3388.7 | 3355.5 | 3307.6 | 3307.6 | 3300.2 |
| 25°   | 3289.3 | 3260.2 | 3197.8 | 3204.9 | 3197.8 |
| 27.5° | 3179.1 | 3153.4 | 3105.9 | 3095.0 | 3076.7 |
| 30°   | 3069.3 | 3039.7 | 2984.7 | 2973.8 | 2959.0 |
| 32.5° | 2951.6 | 2929.9 | 2871.0 | 2848.8 | 2834.0 |
| 35°   | 2837.9 | 2801.3 | 2742.5 | 2720.2 | 2702.0 |
| 37.5° | 2709.4 | 2676.3 | 2617.5 | 2591.7 | 2573.4 |
| 40°   | 2577.3 | 2547.7 | 2488.9 | 2456.2 | 2441.4 |
| 42.5° | 2448.8 | 2419.2 | 2360.8 | 2323.7 | 2302.0 |
| 45°   | 2309.4 | 2283.6 | 2228.3 | 2188.3 | 2173.4 |
| 47.5° | 2173.4 | 2147.8 | 2088.9 | 2048.4 | 2026.5 |
| 50°   | 2030.1 | 2011.8 | 1960.3 | 1909.0 | 1890.7 |
| 52.5° | 1890.7 | 1864.9 | 1817.4 | 1776.9 | 1751.2 |
| 55°   | 1747.7 | 1725.5 | 1681.5 | 1637.4 | 1619.2 |
| 57.5° | 1604.4 | 1586.1 | 1538.2 | 1494.1 | 1479.3 |
| 60°   | 1461.0 | 1446.6 | 1395.2 | 1354.7 | 1343.8 |
| 62.5° | 1321.6 | 1295.9 | 1259.2 | 1222.7 | 1207.9 |
| 65°   | 1178.6 | 1156.4 | 1119.8 | 1086.7 | 1068.4 |
| 67.5° | 1031.8 | 1013.1 | 980.4  | 954.7  | 939.9  |
| 70°   | 895.8  | 881.0  | 847.9  | 822.2  | 807.8  |
| 72.5° | 756.4  | 741.6  | 723.3  | 697.6  | 686.7  |
| 75°   | 616.6  | 609.6  | 590.9  | 569.1  | 576.5  |
| 77.5° | 491.9  | 477.1  | 469.7  | 458.8  | 448.0  |
| 80°   | 367.3  | 363.4  | 356.0  | 345.1  | 337.7  |
| 82.5° | 249.7  | 249.7  | 246.2  | 231.4  | 231.4  |
| 85°   | 150.4  | 146.8  | 143.3  | 132.0  | 128.5  |
| 87.5° | 66.2   | 58.8   | 51.4   | 40.5   | 36.6   |
| 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 | 16.41            | 18.02 | 16.78 | 18.34 | 18.65 | 15.97          | 17.58 | 16.33 | 17.89 | 18.20 |
|                 | 3H   | 18.16            | 19.61 | 18.54 | 19.94 | 20.30 | 17.67          | 19.12 | 18.05 | 19.45 | 19.81 |
|                 | 4H   | 18.81            | 20.18 | 19.20 | 20.52 | 20.90 | 18.31          | 19.68 | 18.71 | 20.03 | 20.40 |
|                 | 6H   | 19.28            | 20.54 | 19.69 | 20.91 | 21.30 | 18.77          | 20.04 | 19.19 | 20.41 | 20.80 |
|                 | 8H   | 19.42            | 20.63 | 19.84 | 21.02 | 21.42 | 18.92          | 20.13 | 19.34 | 20.52 | 20.91 |
|                 | 12H  | 19.51            | 20.67 | 19.94 | 21.05 | 21.48 | 19.00          | 20.16 | 19.43 | 20.54 | 20.97 |
| 4H              | 2H   | 16.97            | 18.34 | 17.37 | 18.69 | 19.06 | 16.62          | 17.99 | 17.02 | 18.33 | 18.71 |
|                 | 3H   | 18.95            | 20.09 | 19.36 | 20.49 | 20.89 | 18.54          | 19.68 | 18.95 | 20.08 | 20.48 |
|                 | 4H   | 19.72            | 20.76 | 20.15 | 21.17 | 21.61 | 19.30          | 20.33 | 19.73 | 20.75 | 21.18 |
|                 | 6H   | 20.32            | 21.22 | 20.77 | 21.66 | 22.12 | 19.89          | 20.79 | 20.34 | 21.23 | 21.69 |
|                 | 8H   | 20.51            | 21.35 | 20.97 | 21.80 | 22.26 | 20.07          | 20.92 | 20.53 | 21.36 | 21.82 |
|                 | 12H  | 20.64            | 21.40 | 21.12 | 21.88 | 22.35 | 20.19          | 20.95 | 20.67 | 21.42 | 21.89 |
| 8H              | 4H   | 20.00            | 20.84 | 20.46 | 21.28 | 21.75 | 19.62          | 20.47 | 20.08 | 20.91 | 21.38 |
|                 | 6H   | 20.71            | 21.41 | 21.20 | 21.90 | 22.38 | 20.33          | 21.03 | 20.82 | 21.52 | 21.99 |
|                 | 8H   | 20.97            | 21.60 | 21.48 | 22.11 | 22.59 | 20.58          | 21.21 | 21.09 | 21.71 | 22.20 |
|                 | 12H  | 21.17            | 21.73 | 21.68 | 22.22 | 22.78 | 20.76          | 21.31 | 21.26 | 21.80 | 22.37 |
| 12H             | 4H   | 20.02            | 20.78 | 20.50 | 21.26 | 21.73 | 19.66          | 20.42 | 20.14 | 20.89 | 21.36 |
|                 | 6H   | 20.75            | 21.39 | 21.26 | 21.89 | 22.38 | 20.39          | 21.02 | 20.90 | 21.53 | 22.01 |
|                 | 8H   | 21.07            | 21.63 | 21.58 | 22.12 | 22.68 | 20.69          | 21.25 | 21.20 | 21.74 | 22.30 |