

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: P930380

Luminaire Tested: DFN2DS-HX4F0-100DS950-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930380  
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-HX4F0-100DS950-RLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

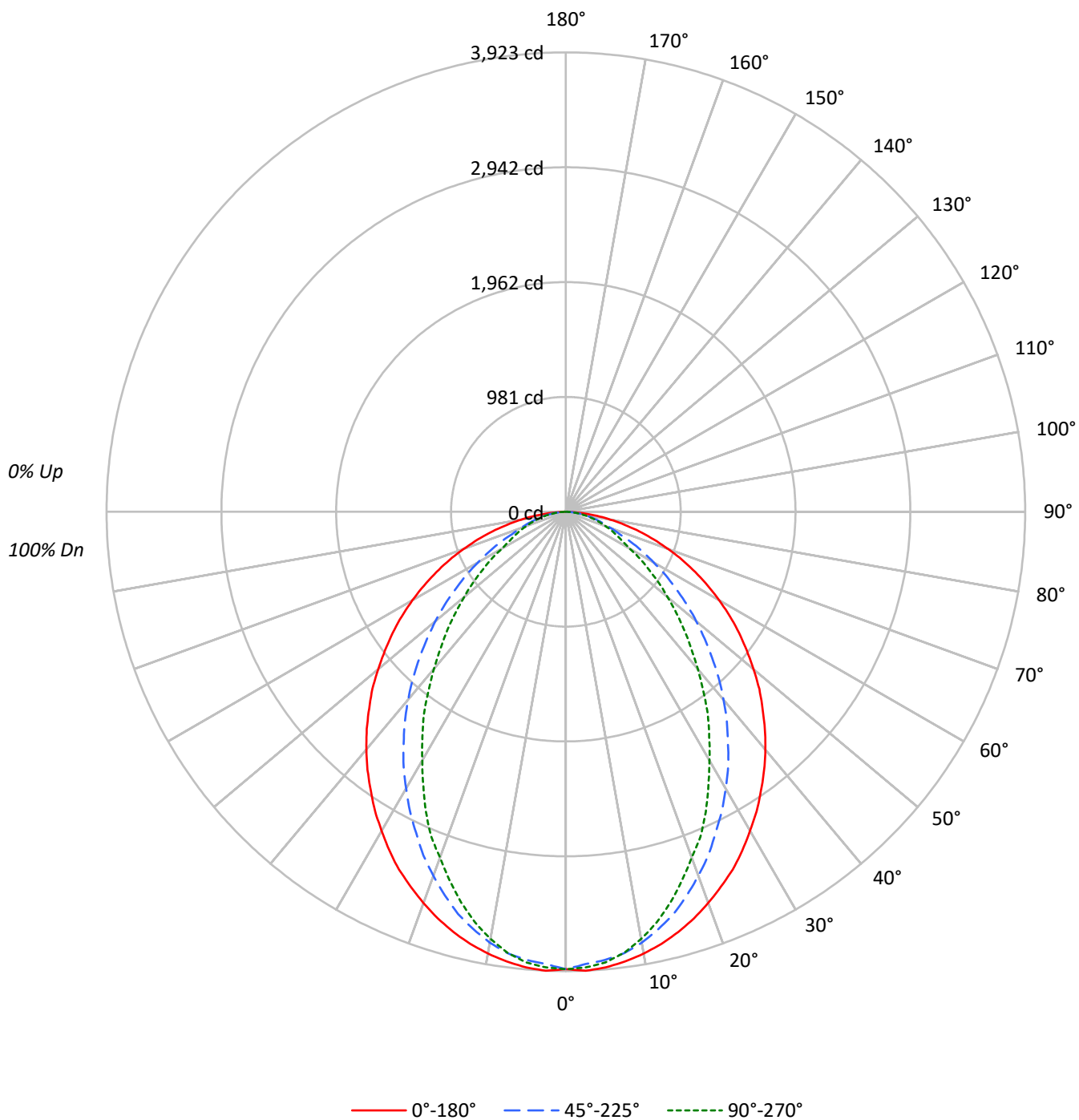
Lumens per Lamp: N/A  
Luminaire Lumens: 8032.5 lumens  
Efficiency: N/A  
Efficacy: 77.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 104.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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°  | 2904 | 2904 | 2904 |
| 5°  | 2915 | 2868 | 2884 |
| 10° | 2893 | 2821 | 2797 |
| 15° | 2860 | 2737 | 2658 |
| 20° | 2814 | 2618 | 2486 |
| 25° | 2766 | 2482 | 2320 |
| 30° | 2701 | 2343 | 2106 |
| 35° | 2637 | 2192 | 1918 |
| 40° | 2573 | 2034 | 1702 |
| 45° | 2498 | 1859 | 1505 |
| 50° | 2421 | 1680 | 1313 |
| 55° | 2341 | 1489 | 1127 |
| 60° | 2250 | 1288 | 936  |
| 65° | 2146 | 1082 | 852  |
| 70° | 2021 | 891  | 784  |
| 75° | 1868 | 812  | 731  |
| 80° | 1649 | 726  | 666  |
| 85° | 1296 | 572  | 572  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2498 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 366.0  | 4.6       |
| 10°-20°   | 1004.9 | 12.5      |
| 20°-30°   | 1410.8 | 17.6      |
| 30°-40°   | 1537.9 | 19.1      |
| 40°-50°   | 1413.5 | 17.6      |
| 50°-60°   | 1110.1 | 13.8      |
| 60°-70°   | 722.5  | 9.0       |
| 70°-80°   | 371.9  | 4.6       |
| 80°-90°   | 95.0   | 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°    | 2781.7 | 34.6      |
| 0°-40°    | 4319.6 | 53.8      |
| 0°-60°    | 6843.1 | 85.2      |
| 0°-90°    | 8032.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8032.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3906 | 3906  | 3906 | 3906  | 3906 |      |
| 5°  | 3906 | 3888  | 3842 | 3874  | 3863 | 370  |
| 15° | 3715 | 3676  | 3556 | 3489  | 3453 | 1047 |
| 25° | 3372 | 3259  | 3026 | 2881  | 2828 | 1551 |
| 35° | 2906 | 2725  | 2414 | 2192  | 2114 | 1819 |
| 45° | 2375 | 2138  | 1767 | 1516  | 1431 | 1834 |
| 55° | 1806 | 1530  | 1149 | 937   | 870  | 1614 |
| 65° | 1220 | 933   | 615  | 495   | 484  | 1209 |
| 75° | 650  | 403   | 283  | 258   | 255  | 688  |
| 85° | 152  | 78    | 67   | 67    | 67   | 182  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3905.7 | 3905.7 | 3905.7 | 3905.7 | 3905.7 |
| 2.5°  | 3923.3 | 3905.7 | 3866.7 | 3902.3 | 3895.2 |
| 5°    | 3905.7 | 3888.0 | 3841.9 | 3873.8 | 3863.3 |
| 7.5°  | 3873.8 | 3852.8 | 3803.2 | 3817.1 | 3799.6 |
| 10°   | 3831.4 | 3806.6 | 3736.2 | 3725.3 | 3704.3 |
| 12.5° | 3778.6 | 3746.6 | 3651.0 | 3630.0 | 3591.0 |
| 15°   | 3714.8 | 3675.8 | 3555.8 | 3488.7 | 3453.4 |
| 17.5° | 3640.5 | 3583.9 | 3435.5 | 3357.8 | 3301.2 |
| 20°   | 3555.8 | 3484.9 | 3308.3 | 3220.2 | 3142.1 |
| 22.5° | 3463.9 | 3382.5 | 3177.4 | 3057.5 | 3004.5 |
| 25°   | 3372.0 | 3258.8 | 3025.5 | 2880.7 | 2827.5 |
| 27.5° | 3262.5 | 3142.1 | 2884.1 | 2718.0 | 2636.6 |
| 30°   | 3145.9 | 3011.2 | 2728.5 | 2548.6 | 2452.9 |
| 32.5° | 3032.7 | 2869.9 | 2580.4 | 2368.2 | 2279.6 |
| 35°   | 2905.5 | 2725.2 | 2414.3 | 2191.5 | 2113.5 |
| 37.5° | 2781.8 | 2587.1 | 2258.6 | 2014.6 | 1926.4 |
| 40°   | 2650.9 | 2439.0 | 2095.9 | 1845.0 | 1753.2 |
| 42.5° | 2516.6 | 2290.5 | 1933.6 | 1671.8 | 1583.6 |
| 45°   | 2375.3 | 2138.3 | 1767.4 | 1516.2 | 1431.4 |
| 47.5° | 2241.1 | 1990.2 | 1608.4 | 1357.1 | 1279.5 |
| 50°   | 2092.5 | 1841.6 | 1452.7 | 1208.7 | 1134.8 |
| 52.5° | 1947.4 | 1682.3 | 1304.3 | 1071.0 | 1003.9 |
| 55°   | 1806.0 | 1530.4 | 1148.6 | 936.8  | 869.6  |
| 57.5° | 1661.3 | 1378.5 | 1011.1 | 813.0  | 756.4  |
| 60°   | 1512.8 | 1230.0 | 865.9  | 685.9  | 629.3  |
| 62.5° | 1368.0 | 1085.2 | 742.1  | 572.7  | 544.5  |
| 65°   | 1219.5 | 933.0  | 615.0  | 495.0  | 484.1  |
| 67.5° | 1078.2 | 791.6  | 495.0  | 434.6  | 424.1  |
| 70°   | 929.6  | 654.0  | 409.8  | 374.6  | 360.4  |
| 72.5° | 788.2  | 526.5  | 342.8  | 314.6  | 307.5  |
| 75°   | 650.3  | 402.8  | 282.7  | 258.0  | 254.6  |
| 77.5° | 512.7  | 286.1  | 222.7  | 208.5  | 201.4  |
| 80°   | 385.1  | 205.2  | 169.5  | 155.6  | 155.6  |
| 82.5° | 268.5  | 138.0  | 116.6  | 109.5  | 109.5  |
| 85°   | 151.9  | 77.6   | 67.1   | 67.1   | 67.1   |
| 87.5° | 56.6   | 28.2   | 28.2   | 24.8   | 24.8   |
| 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 | 14.94            | 16.46 | 15.30 | 16.77 | 17.09 | 10.90          | 12.42 | 11.26 | 12.73 | 13.05 |
|                 | 3H   | 16.70            | 18.07 | 17.08 | 18.40 | 18.76 | 12.16          | 13.53 | 12.54 | 13.86 | 14.22 |
|                 | 4H   | 17.37            | 18.65 | 17.77 | 19.00 | 19.38 | 12.67          | 13.95 | 13.07 | 14.30 | 14.67 |
|                 | 6H   | 17.86            | 19.04 | 18.27 | 19.41 | 19.80 | 13.05          | 14.23 | 13.46 | 14.60 | 14.99 |
|                 | 8H   | 18.02            | 19.15 | 18.45 | 19.54 | 19.94 | 13.17          | 14.30 | 13.60 | 14.69 | 15.09 |
|                 | 12H  | 18.13            | 19.21 | 18.56 | 19.59 | 20.02 | 13.25          | 14.33 | 13.68 | 14.71 | 15.14 |
| 4H              | 2H   | 15.04            | 16.32 | 15.44 | 16.67 | 17.05 | 11.59          | 12.88 | 11.99 | 13.22 | 13.60 |
|                 | 3H   | 16.98            | 18.04 | 17.39 | 18.44 | 18.84 | 13.04          | 14.10 | 13.45 | 14.50 | 14.90 |
|                 | 4H   | 17.73            | 18.68 | 18.16 | 19.10 | 19.54 | 13.64          | 14.59 | 14.07 | 15.01 | 15.45 |
|                 | 6H   | 18.32            | 19.15 | 18.77 | 19.59 | 20.05 | 14.13          | 14.96 | 14.58 | 15.40 | 15.86 |
|                 | 8H   | 18.53            | 19.31 | 19.00 | 19.75 | 20.22 | 14.29          | 15.06 | 14.75 | 15.51 | 15.98 |
|                 | 12H  | 18.69            | 19.38 | 19.17 | 19.86 | 20.33 | 14.40          | 15.10 | 14.89 | 15.58 | 16.05 |
| 8H              | 4H   | 17.75            | 18.53 | 18.21 | 18.97 | 19.44 | 13.99          | 14.77 | 14.45 | 15.21 | 15.68 |
|                 | 6H   | 18.39            | 19.03 | 18.88 | 19.52 | 20.00 | 14.58          | 15.22 | 15.07 | 15.71 | 16.19 |
|                 | 8H   | 18.64            | 19.21 | 19.15 | 19.72 | 20.21 | 14.80          | 15.38 | 15.31 | 15.88 | 16.37 |
|                 | 12H  | 18.84            | 19.35 | 19.35 | 19.84 | 20.41 | 14.98          | 15.49 | 15.49 | 15.98 | 16.54 |
| 12H             | 4H   | 17.73            | 18.43 | 18.22 | 18.91 | 19.38 | 14.03          | 14.73 | 14.52 | 15.21 | 15.68 |
|                 | 6H   | 18.37            | 18.95 | 18.88 | 19.46 | 19.94 | 14.64          | 15.22 | 15.15 | 15.73 | 16.22 |
|                 | 8H   | 18.65            | 19.16 | 19.16 | 19.65 | 20.22 | 14.91          | 15.42 | 15.42 | 15.92 | 16.48 |