

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: P930412

Luminaire Tested: DFN2DS-HX4F0-120DS935-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930412  
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-HX4F0-120DS935-RLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

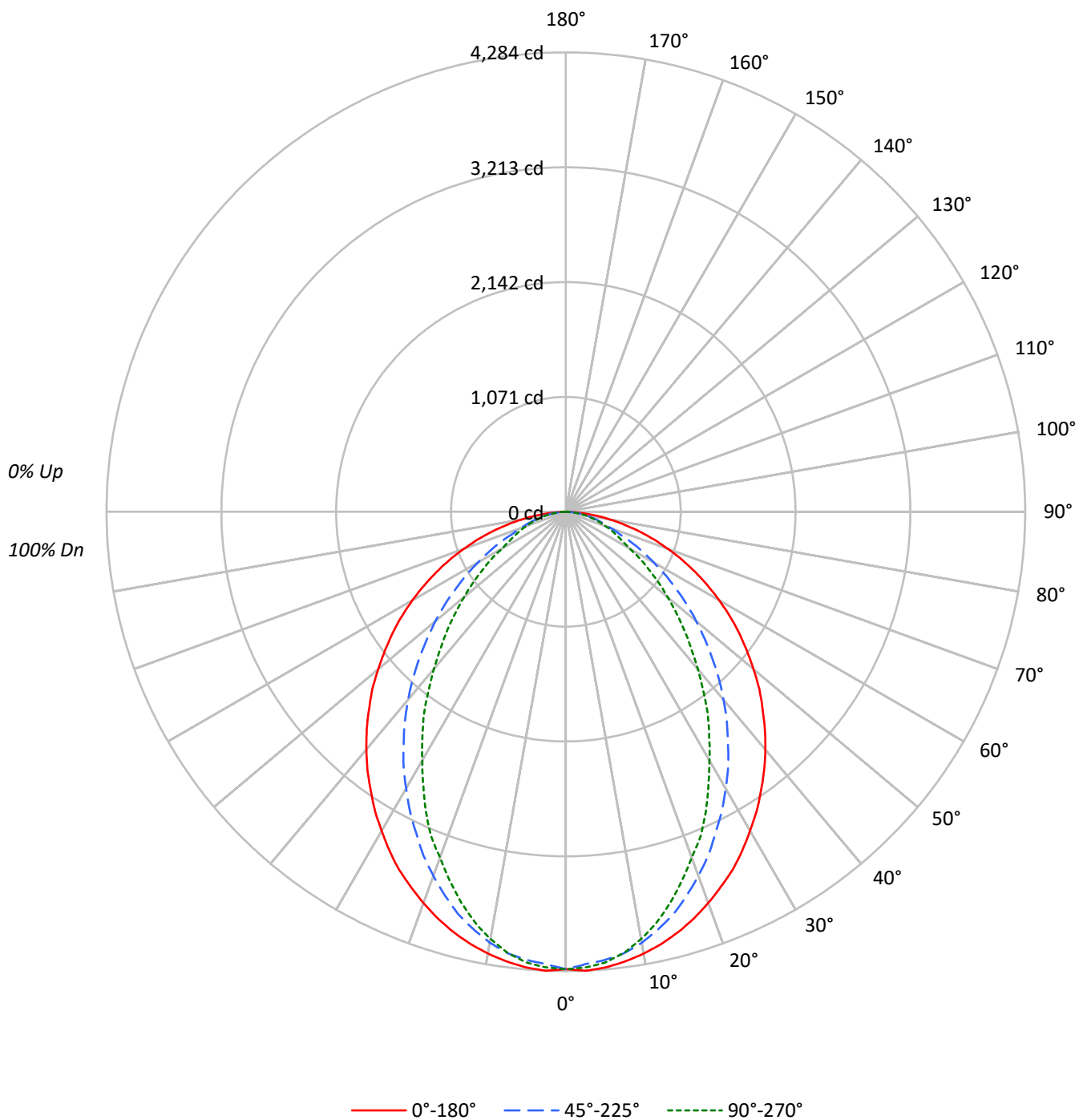
Lumens per Lamp: N/A  
Luminaire Lumens: 8772.0 lumens  
Efficiency: N/A  
Efficacy: 67.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 131  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
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°  | 3172 | 3172 | 3172 |
| 5°  | 3184 | 3132 | 3149 |
| 10° | 3159 | 3081 | 3054 |
| 15° | 3123 | 2989 | 2903 |
| 20° | 3073 | 2859 | 2715 |
| 25° | 3021 | 2711 | 2533 |
| 30° | 2950 | 2558 | 2300 |
| 35° | 2880 | 2393 | 2095 |
| 40° | 2810 | 2222 | 1858 |
| 45° | 2728 | 2030 | 1644 |
| 50° | 2643 | 1835 | 1434 |
| 55° | 2557 | 1626 | 1231 |
| 60° | 2457 | 1406 | 1022 |
| 65° | 2343 | 1182 | 930  |
| 70° | 2207 | 973  | 855  |
| 75° | 2040 | 887  | 799  |
| 80° | 1801 | 793  | 728  |
| 85° | 1415 | 625  | 625  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2728 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 399.7  | 4.6       |
| 10°-20°   | 1097.4 | 12.5      |
| 20°-30°   | 1540.7 | 17.6      |
| 30°-40°   | 1679.4 | 19.1      |
| 40°-50°   | 1543.6 | 17.6      |
| 50°-60°   | 1212.2 | 13.8      |
| 60°-70°   | 789.1  | 9.0       |
| 70°-80°   | 406.2  | 4.6       |
| 80°-90°   | 103.7  | 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°    | 3037.8 | 34.6      |
| 0°-40°    | 4717.2 | 53.8      |
| 0°-60°    | 7473.1 | 85.2      |
| 0°-90°    | 8772.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 8772.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4265 | 4265  | 4265 | 4265  | 4265 |      |
| 5°  | 4265 | 4246  | 4196 | 4230  | 4219 | 404  |
| 15° | 4057 | 4014  | 3883 | 3810  | 3771 | 1143 |
| 25° | 3682 | 3559  | 3304 | 3146  | 3088 | 1694 |
| 35° | 3173 | 2976  | 2636 | 2393  | 2308 | 1986 |
| 45° | 2594 | 2335  | 1930 | 1656  | 1563 | 2003 |
| 55° | 1972 | 1671  | 1254 | 1023  | 950  | 1762 |
| 65° | 1332 | 1019  | 672  | 541   | 529  | 1320 |
| 75° | 710  | 440   | 309  | 282   | 278  | 751  |
| 85° | 166  | 85    | 73   | 73    | 73   | 199  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 4265.3 | 4265.3 | 4265.3 | 4265.3 | 4265.3 |
| 2.5°  | 4284.5 | 4265.3 | 4222.7 | 4261.6 | 4253.7 |
| 5°    | 4265.3 | 4246.0 | 4195.6 | 4230.4 | 4219.0 |
| 7.5°  | 4230.4 | 4207.5 | 4153.5 | 4168.6 | 4149.3 |
| 10°   | 4184.2 | 4157.2 | 4080.1 | 4068.2 | 4045.4 |
| 12.5° | 4126.4 | 4091.6 | 3987.1 | 3964.3 | 3921.7 |
| 15°   | 4056.8 | 4014.2 | 3883.2 | 3809.8 | 3771.4 |
| 17.5° | 3975.7 | 3913.9 | 3751.7 | 3667.0 | 3605.1 |
| 20°   | 3883.2 | 3805.8 | 3612.9 | 3516.6 | 3431.4 |
| 22.5° | 3782.8 | 3694.0 | 3469.9 | 3338.9 | 3281.2 |
| 25°   | 3682.5 | 3558.8 | 3304.0 | 3146.0 | 3087.8 |
| 27.5° | 3562.9 | 3431.4 | 3149.7 | 2968.3 | 2879.4 |
| 30°   | 3435.5 | 3288.6 | 2979.7 | 2783.1 | 2678.7 |
| 32.5° | 3311.9 | 3134.1 | 2818.0 | 2586.2 | 2489.5 |
| 35°   | 3173.1 | 2976.0 | 2636.5 | 2393.3 | 2308.1 |
| 37.5° | 3037.9 | 2825.4 | 2466.6 | 2200.0 | 2103.7 |
| 40°   | 2894.9 | 2663.6 | 2288.9 | 2014.9 | 1914.5 |
| 42.5° | 2748.3 | 2501.4 | 2111.6 | 1825.7 | 1729.5 |
| 45°   | 2593.9 | 2335.2 | 1930.1 | 1655.8 | 1563.1 |
| 47.5° | 2447.3 | 2173.4 | 1756.5 | 1482.1 | 1397.3 |
| 50°   | 2285.2 | 2011.2 | 1586.5 | 1319.9 | 1239.3 |
| 52.5° | 2126.7 | 1837.1 | 1424.3 | 1169.6 | 1096.3 |
| 55°   | 1972.3 | 1671.3 | 1254.4 | 1023.0 | 949.7  |
| 57.5° | 1814.2 | 1505.4 | 1104.1 | 887.9  | 826.0  |
| 60°   | 1652.1 | 1343.2 | 945.6  | 749.1  | 687.2  |
| 62.5° | 1494.0 | 1185.2 | 810.5  | 625.4  | 594.6  |
| 65°   | 1331.8 | 1018.9 | 671.7  | 540.6  | 528.7  |
| 67.5° | 1177.4 | 864.5  | 540.6  | 474.6  | 463.2  |
| 70°   | 1015.2 | 714.2  | 447.6  | 409.1  | 393.5  |
| 72.5° | 860.9  | 575.0  | 374.3  | 343.6  | 335.8  |
| 75°   | 710.1  | 439.8  | 308.8  | 281.7  | 278.0  |
| 77.5° | 559.9  | 312.4  | 243.3  | 227.7  | 219.9  |
| 80°   | 420.6  | 224.0  | 185.1  | 169.9  | 169.9  |
| 82.5° | 293.3  | 150.7  | 127.4  | 119.5  | 119.5  |
| 85°   | 165.9  | 84.8   | 73.3   | 73.3   | 73.3   |
| 87.5° | 61.8   | 30.7   | 30.7   | 27.0   | 27.0   |
| 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 | 15.24            | 16.77 | 15.61 | 17.08 | 17.39 | 11.21          | 12.73 | 11.57 | 13.04 | 13.36 |
|                 | 3H   | 17.01            | 18.38 | 17.39 | 18.70 | 19.06 | 12.47          | 13.84 | 12.85 | 14.16 | 14.53 |
|                 | 4H   | 17.68            | 18.96 | 18.08 | 19.31 | 19.68 | 12.97          | 14.25 | 13.37 | 14.60 | 14.98 |
|                 | 6H   | 18.17            | 19.35 | 18.58 | 19.71 | 20.11 | 13.35          | 14.54 | 13.77 | 14.90 | 15.29 |
|                 | 8H   | 18.33            | 19.46 | 18.76 | 19.85 | 20.25 | 13.48          | 14.60 | 13.90 | 14.99 | 15.39 |
|                 | 12H  | 18.43            | 19.51 | 18.86 | 19.89 | 20.32 | 13.56          | 14.64 | 13.99 | 15.02 | 15.45 |
| 4H              | 2H   | 15.35            | 16.63 | 15.75 | 16.98 | 17.36 | 11.90          | 13.18 | 12.30 | 13.53 | 13.91 |
|                 | 3H   | 17.28            | 18.34 | 17.69 | 18.74 | 19.15 | 13.34          | 14.41 | 13.75 | 14.81 | 15.21 |
|                 | 4H   | 18.03            | 18.99 | 18.46 | 19.40 | 19.84 | 13.94          | 14.90 | 14.38 | 15.32 | 15.75 |
|                 | 6H   | 18.62            | 19.46 | 19.08 | 19.90 | 20.36 | 14.43          | 15.26 | 14.89 | 15.71 | 16.17 |
|                 | 8H   | 18.84            | 19.62 | 19.30 | 20.06 | 20.53 | 14.59          | 15.37 | 15.06 | 15.81 | 16.28 |
|                 | 12H  | 18.99            | 19.69 | 19.47 | 20.16 | 20.64 | 14.71          | 15.40 | 15.19 | 15.88 | 16.35 |
| 8H              | 4H   | 18.06            | 18.83 | 18.52 | 19.28 | 19.74 | 14.30          | 15.07 | 14.76 | 15.52 | 15.99 |
|                 | 6H   | 18.69            | 19.34 | 19.19 | 19.83 | 20.30 | 14.88          | 15.53 | 15.38 | 16.02 | 16.49 |
|                 | 8H   | 18.94            | 19.52 | 19.46 | 20.03 | 20.52 | 15.10          | 15.68 | 15.62 | 16.19 | 16.68 |
|                 | 12H  | 19.15            | 19.66 | 19.66 | 20.15 | 20.71 | 15.28          | 15.79 | 15.79 | 16.29 | 16.85 |
| 12H             | 4H   | 18.04            | 18.73 | 18.52 | 19.21 | 19.68 | 14.34          | 15.04 | 14.82 | 15.51 | 15.98 |
|                 | 6H   | 18.67            | 19.25 | 19.19 | 19.76 | 20.25 | 14.95          | 15.52 | 15.46 | 16.03 | 16.52 |
|                 | 8H   | 18.96            | 19.47 | 19.47 | 19.96 | 20.53 | 15.22          | 15.73 | 15.73 | 16.22 | 16.79 |