

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: P930338

Luminaire Tested: DFN2DS-HX4F0-080DS930-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930338  
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-HX4F0-080DS930-RLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

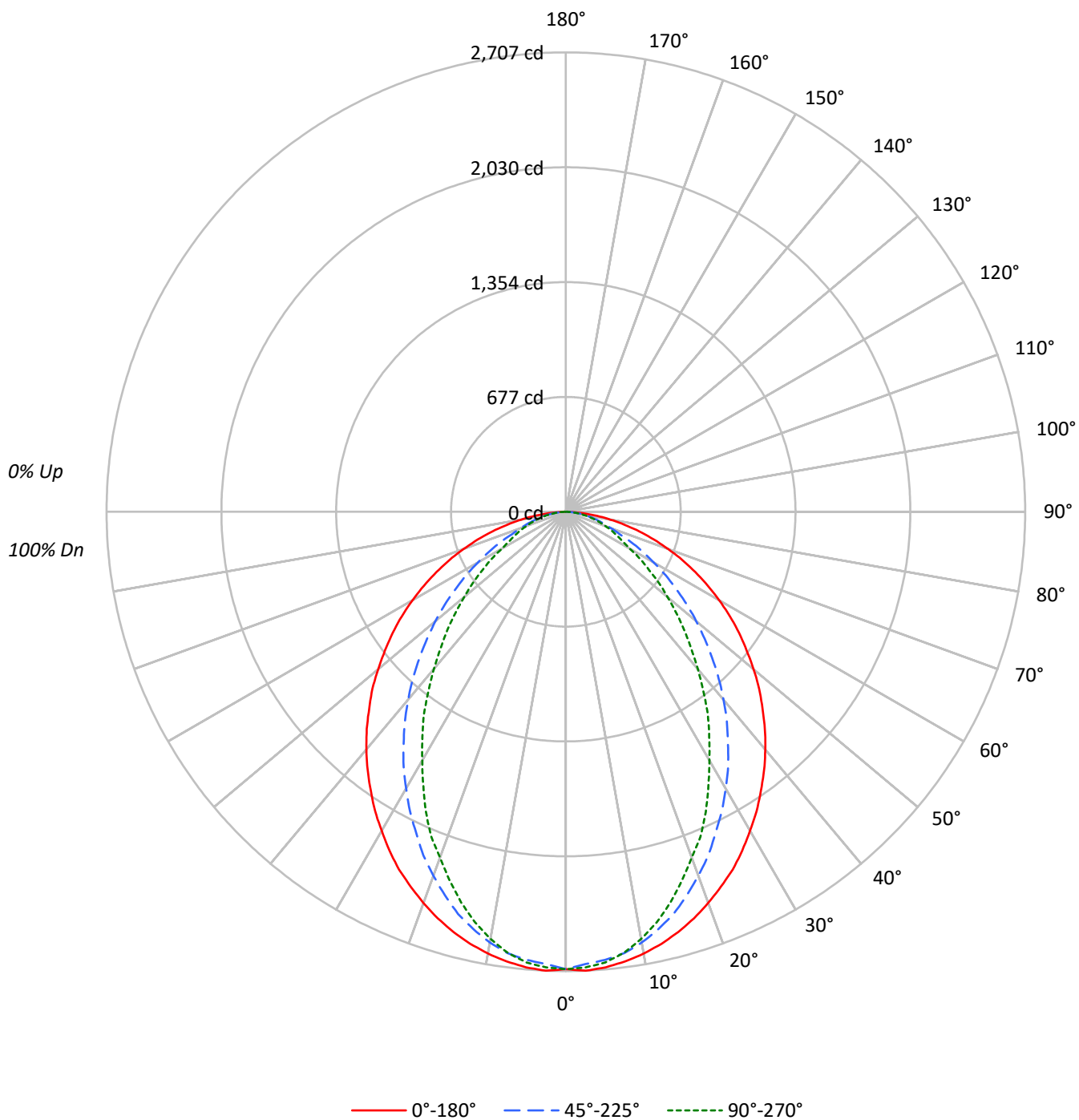
Lumens per Lamp: N/A  
Luminaire Lumens: 5542.0 lumens  
Efficiency: N/A  
Efficacy: 68.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 81.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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°  | 2004 | 2004 | 2004 |
| 5°  | 2011 | 1978 | 1990 |
| 10° | 1996 | 1946 | 1930 |
| 15° | 1973 | 1889 | 1834 |
| 20° | 1941 | 1806 | 1715 |
| 25° | 1909 | 1713 | 1601 |
| 30° | 1864 | 1616 | 1453 |
| 35° | 1820 | 1512 | 1324 |
| 40° | 1775 | 1404 | 1174 |
| 45° | 1723 | 1282 | 1039 |
| 50° | 1670 | 1160 | 906  |
| 55° | 1615 | 1027 | 778  |
| 60° | 1552 | 888  | 646  |
| 65° | 1480 | 747  | 588  |
| 70° | 1394 | 615  | 541  |
| 75° | 1289 | 561  | 505  |
| 80° | 1138 | 501  | 459  |
| 85° | 894  | 395  | 395  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1723 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 252.6  | 4.6       |
| 10°-20°   | 693.3  | 12.5      |
| 20°-30°   | 973.4  | 17.6      |
| 30°-40°   | 1061.0 | 19.1      |
| 40°-50°   | 975.2  | 17.6      |
| 50°-60°   | 765.9  | 13.8      |
| 60°-70°   | 498.5  | 9.0       |
| 70°-80°   | 256.6  | 4.6       |
| 80°-90°   | 65.5   | 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°    | 1919.2 | 34.6      |
| 0°-40°    | 2980.3 | 53.8      |
| 0°-60°    | 4721.4 | 85.2      |
| 0°-90°    | 5542.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5542.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2695 | 2695  | 2695 | 2695  | 2695 |      |
| 5°  | 2695 | 2683  | 2651 | 2673  | 2666 | 256  |
| 15° | 2563 | 2536  | 2453 | 2407  | 2383 | 722  |
| 25° | 2326 | 2248  | 2088 | 1988  | 1951 | 1070 |
| 35° | 2005 | 1880  | 1666 | 1512  | 1458 | 1255 |
| 45° | 1639 | 1475  | 1219 | 1046  | 988  | 1266 |
| 55° | 1246 | 1056  | 792  | 646   | 600  | 1113 |
| 65° | 841  | 644   | 424  | 342   | 334  | 834  |
| 75° | 449  | 278   | 195  | 178   | 176  | 475  |
| 85° | 105  | 54    | 46   | 46    | 46   | 126  |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2694.7 | 2694.7 | 2694.7 | 2694.7 | 2694.7 |
| 2.5°  | 2706.9 | 2694.7 | 2667.8 | 2692.4 | 2687.5 |
| 5°    | 2694.7 | 2682.6 | 2650.7 | 2672.7 | 2665.5 |
| 7.5°  | 2672.7 | 2658.2 | 2624.1 | 2633.7 | 2621.4 |
| 10°   | 2643.5 | 2626.4 | 2577.8 | 2570.3 | 2555.8 |
| 12.5° | 2607.0 | 2585.0 | 2519.0 | 2504.5 | 2477.6 |
| 15°   | 2563.0 | 2536.1 | 2453.3 | 2407.0 | 2382.7 |
| 17.5° | 2511.7 | 2472.7 | 2370.3 | 2316.7 | 2277.6 |
| 20°   | 2453.3 | 2404.4 | 2282.6 | 2221.8 | 2167.9 |
| 22.5° | 2389.9 | 2333.8 | 2192.3 | 2109.5 | 2073.0 |
| 25°   | 2326.5 | 2248.4 | 2087.5 | 1987.6 | 1950.9 |
| 27.5° | 2250.9 | 2167.9 | 1989.9 | 1875.3 | 1819.2 |
| 30°   | 2170.5 | 2077.6 | 1882.6 | 1758.4 | 1692.3 |
| 32.5° | 2092.3 | 1980.1 | 1780.4 | 1633.9 | 1572.9 |
| 35°   | 2004.7 | 1880.2 | 1665.7 | 1512.1 | 1458.2 |
| 37.5° | 1919.2 | 1785.0 | 1558.4 | 1389.9 | 1329.1 |
| 40°   | 1829.0 | 1682.8 | 1446.1 | 1272.9 | 1209.5 |
| 42.5° | 1736.4 | 1580.4 | 1334.0 | 1153.5 | 1092.6 |
| 45°   | 1638.8 | 1475.3 | 1219.4 | 1046.1 | 987.6  |
| 47.5° | 1546.2 | 1373.1 | 1109.7 | 936.4  | 882.8  |
| 50°   | 1443.7 | 1270.7 | 1002.4 | 833.9  | 782.9  |
| 52.5° | 1343.6 | 1160.6 | 899.8  | 739.0  | 692.7  |
| 55°   | 1246.1 | 1055.9 | 792.5  | 646.3  | 600.0  |
| 57.5° | 1146.2 | 951.1  | 697.6  | 561.0  | 521.8  |
| 60°   | 1043.7 | 848.7  | 597.4  | 473.2  | 434.2  |
| 62.5° | 943.9  | 748.7  | 512.1  | 395.1  | 375.7  |
| 65°   | 841.4  | 643.7  | 424.3  | 341.6  | 334.0  |
| 67.5° | 743.9  | 546.2  | 341.6  | 299.8  | 292.7  |
| 70°   | 641.4  | 451.3  | 282.8  | 258.4  | 248.7  |
| 72.5° | 543.8  | 363.2  | 236.5  | 217.1  | 212.1  |
| 75°   | 448.7  | 277.9  | 195.1  | 178.0  | 175.7  |
| 77.5° | 353.7  | 197.4  | 153.7  | 143.8  | 139.0  |
| 80°   | 265.7  | 141.6  | 117.0  | 107.3  | 107.3  |
| 82.5° | 185.2  | 95.2   | 80.4   | 75.6   | 75.6   |
| 85°   | 104.8  | 53.5   | 46.3   | 46.3   | 46.3   |
| 87.5° | 39.0   | 19.4   | 19.4   | 17.1   | 17.1   |
| 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 | 13.65            | 15.17 | 14.01 | 15.48 | 15.80 | 9.61           | 11.13 | 9.98  | 11.45 | 11.76 |
|                 | 3H   | 15.41            | 16.78 | 15.79 | 17.11 | 17.47 | 10.88          | 12.24 | 11.25 | 12.57 | 12.93 |
|                 | 4H   | 16.08            | 17.36 | 16.48 | 17.71 | 18.09 | 11.38          | 12.66 | 11.78 | 13.01 | 13.38 |
|                 | 6H   | 16.57            | 17.75 | 16.98 | 18.12 | 18.51 | 11.76          | 12.94 | 12.17 | 13.31 | 13.70 |
|                 | 8H   | 16.74            | 17.86 | 17.16 | 18.25 | 18.65 | 11.88          | 13.01 | 12.31 | 13.40 | 13.80 |
|                 | 12H  | 16.84            | 17.92 | 17.27 | 18.30 | 18.73 | 11.96          | 13.04 | 12.39 | 13.42 | 13.85 |
| 4H              | 2H   | 13.75            | 15.03 | 14.15 | 15.38 | 15.76 | 10.31          | 11.59 | 10.71 | 11.94 | 12.31 |
|                 | 3H   | 15.69            | 16.75 | 16.10 | 17.15 | 17.55 | 11.75          | 12.81 | 12.16 | 13.21 | 13.61 |
|                 | 4H   | 16.44            | 17.39 | 16.87 | 17.81 | 18.25 | 12.35          | 13.30 | 12.78 | 13.72 | 14.16 |
|                 | 6H   | 17.03            | 17.86 | 17.49 | 18.30 | 18.76 | 12.84          | 13.67 | 13.29 | 14.11 | 14.57 |
|                 | 8H   | 17.24            | 18.02 | 17.71 | 18.46 | 18.93 | 13.00          | 13.78 | 13.46 | 14.22 | 14.69 |
|                 | 12H  | 17.40            | 18.09 | 17.88 | 18.57 | 19.04 | 13.12          | 13.81 | 13.60 | 14.29 | 14.76 |
| 8H              | 4H   | 16.46            | 17.24 | 16.92 | 17.68 | 18.15 | 12.70          | 13.48 | 13.17 | 13.92 | 14.39 |
|                 | 6H   | 17.10            | 17.74 | 17.59 | 18.23 | 18.71 | 13.29          | 13.93 | 13.78 | 14.42 | 14.90 |
|                 | 8H   | 17.35            | 17.92 | 17.86 | 18.43 | 18.92 | 13.51          | 14.09 | 14.02 | 14.60 | 15.08 |
|                 | 12H  | 17.55            | 18.06 | 18.06 | 18.55 | 19.12 | 13.69          | 14.20 | 14.20 | 14.69 | 15.26 |
| 12H             | 4H   | 16.44            | 17.14 | 16.93 | 17.62 | 18.09 | 12.75          | 13.44 | 13.23 | 13.92 | 14.39 |
|                 | 6H   | 17.08            | 17.66 | 17.59 | 18.17 | 18.65 | 13.35          | 13.93 | 13.87 | 14.44 | 14.93 |
|                 | 8H   | 17.36            | 17.87 | 17.87 | 18.37 | 18.93 | 13.62          | 14.13 | 14.13 | 14.63 | 15.19 |