

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: P930274

Luminaire Tested: DFN2DS-HX4F0-050DS830-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930274  
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-HX4F0-050DS830-RLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

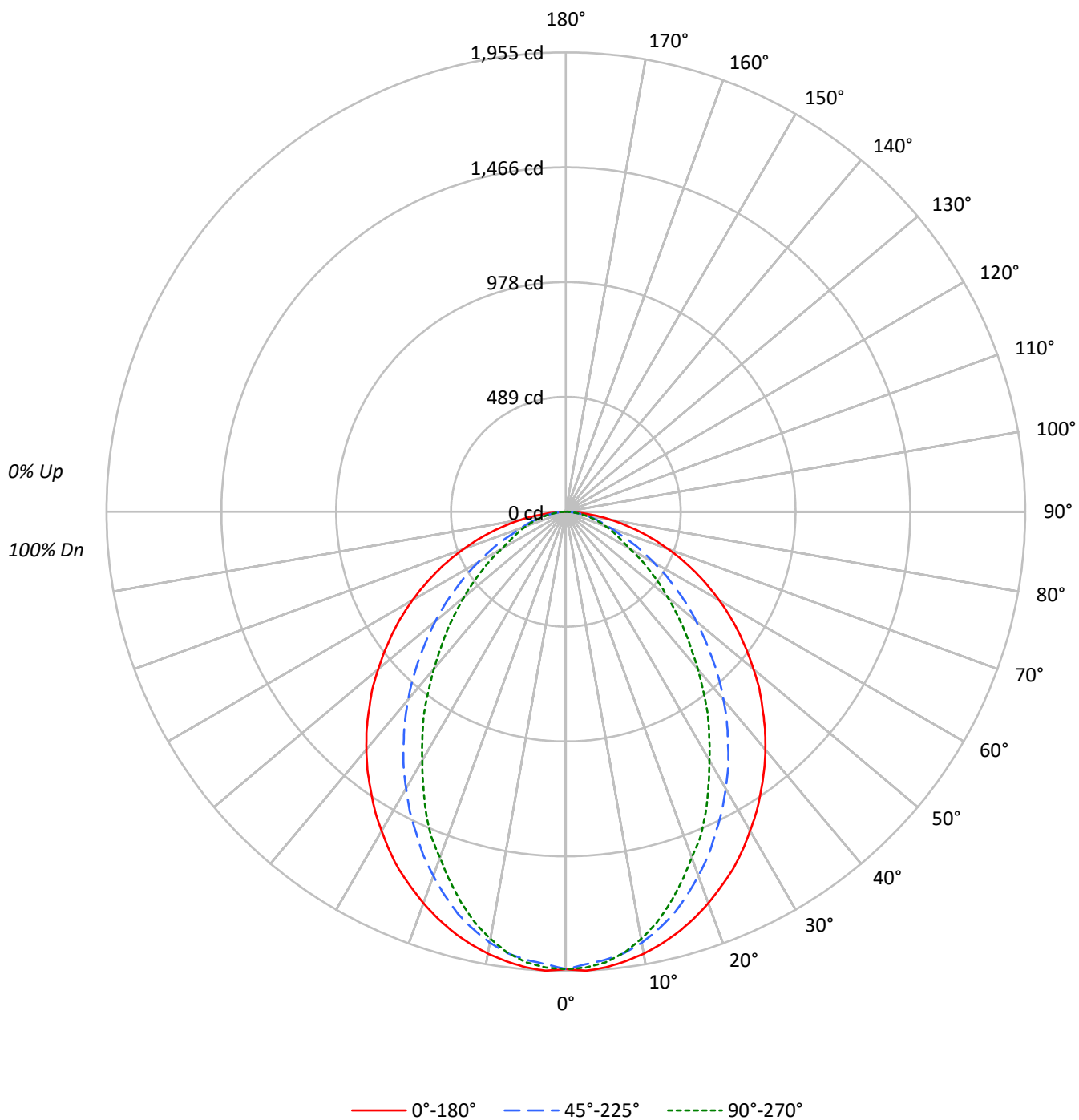
Lumens per Lamp: N/A  
Luminaire Lumens: 4003.5 lumens  
Efficiency: N/A  
Efficacy: 82.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 4.09' x L: 3.54' x H: 0')  
CIE Type: Direct

Input Watts (W): 48.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
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  |     |     | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  | 30  | 10  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 | 102 | 102 | 100 |
| 1   | 110 | 106 | 102 | 98  | 107 | 103 | 100 | 97  | 99  | 96  | 94  |  | 95  | 93  | 91  |  | 92  | 90  | 88  | 86  |
| 2   | 101 | 94  | 87  | 82  | 98  | 92  | 86  | 81  | 88  | 83  | 79  |  | 85  | 81  | 78  |  | 82  | 79  | 76  | 74  |
| 3   | 93  | 83  | 76  | 70  | 90  | 82  | 75  | 69  | 79  | 73  | 68  |  | 76  | 71  | 67  |  | 74  | 69  | 66  | 64  |
| 4   | 86  | 75  | 66  | 60  | 83  | 73  | 66  | 60  | 71  | 64  | 59  |  | 69  | 63  | 58  |  | 66  | 62  | 57  | 55  |
| 5   | 79  | 67  | 59  | 53  | 77  | 66  | 58  | 52  | 64  | 57  | 52  |  | 62  | 56  | 51  |  | 60  | 55  | 51  | 49  |
| 6   | 74  | 61  | 53  | 47  | 72  | 60  | 52  | 46  | 58  | 51  | 46  |  | 57  | 50  | 46  |  | 55  | 50  | 45  | 43  |
| 7   | 68  | 56  | 47  | 42  | 67  | 55  | 47  | 42  | 53  | 46  | 41  |  | 52  | 46  | 41  |  | 51  | 45  | 41  | 39  |
| 8   | 64  | 51  | 43  | 38  | 62  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 42  | 37  |  | 47  | 41  | 37  | 35  |
| 9   | 60  | 47  | 39  | 34  | 59  | 47  | 39  | 34  | 46  | 39  | 34  |  | 44  | 38  | 34  |  | 44  | 38  | 34  | 32  |
| 10  | 56  | 44  | 36  | 31  | 55  | 43  | 36  | 31  | 42  | 36  | 31  |  | 41  | 35  | 31  |  | 41  | 35  | 31  | 29  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1447 | 1447 | 1447 |
| 5°  | 1453 | 1429 | 1437 |
| 10° | 1442 | 1406 | 1394 |
| 15° | 1425 | 1364 | 1325 |
| 20° | 1402 | 1305 | 1239 |
| 25° | 1379 | 1237 | 1156 |
| 30° | 1346 | 1168 | 1050 |
| 35° | 1314 | 1092 | 956  |
| 40° | 1282 | 1014 | 848  |
| 45° | 1245 | 926  | 750  |
| 50° | 1207 | 838  | 654  |
| 55° | 1167 | 742  | 562  |
| 60° | 1121 | 642  | 466  |
| 65° | 1069 | 539  | 425  |
| 70° | 1007 | 444  | 390  |
| 75° | 931  | 405  | 365  |
| 80° | 822  | 362  | 332  |
| 85° | 646  | 285  | 285  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1245 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 182.4  | 4.6       |
| 10°-20°   | 500.8  | 12.5      |
| 20°-30°   | 703.2  | 17.6      |
| 30°-40°   | 766.5  | 19.1      |
| 40°-50°   | 704.5  | 17.6      |
| 50°-60°   | 553.3  | 13.8      |
| 60°-70°   | 360.1  | 9.0       |
| 70°-80°   | 185.4  | 4.6       |
| 80°-90°   | 47.3   | 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°    | 1386.4 | 34.6      |
| 0°-40°    | 2152.9 | 53.8      |
| 0°-60°    | 3410.7 | 85.2      |
| 0°-90°    | 4003.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4003.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1947 | 1947  | 1947 | 1947  | 1947 |      |
| 5°  | 1947 | 1938  | 1915 | 1931  | 1926 | 185  |
| 15° | 1852 | 1832  | 1772 | 1739  | 1721 | 522  |
| 25° | 1681 | 1624  | 1508 | 1436  | 1409 | 773  |
| 35° | 1448 | 1358  | 1203 | 1092  | 1053 | 906  |
| 45° | 1184 | 1066  | 881  | 756   | 713  | 914  |
| 55° | 900  | 763   | 572  | 467   | 433  | 804  |
| 65° | 608  | 465   | 306  | 247   | 241  | 603  |
| 75° | 324  | 201   | 141  | 129   | 127  | 343  |
| 85° | 76   | 39    | 33   | 33    | 33   | 91   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1946.6 | 1946.6 | 1946.6 | 1946.6 | 1946.6 |
| 2.5°  | 1955.4 | 1946.6 | 1927.2 | 1944.9 | 1941.4 |
| 5°    | 1946.6 | 1937.9 | 1914.9 | 1930.7 | 1925.5 |
| 7.5°  | 1930.7 | 1920.3 | 1895.6 | 1902.6 | 1893.7 |
| 10°   | 1909.6 | 1897.3 | 1862.1 | 1856.8 | 1846.2 |
| 12.5° | 1883.2 | 1867.4 | 1819.8 | 1809.3 | 1789.8 |
| 15°   | 1851.5 | 1832.1 | 1772.3 | 1738.8 | 1721.2 |
| 17.5° | 1814.5 | 1786.3 | 1712.3 | 1673.6 | 1645.3 |
| 20°   | 1772.3 | 1737.0 | 1648.9 | 1605.0 | 1566.1 |
| 22.5° | 1726.5 | 1685.9 | 1583.7 | 1523.9 | 1497.5 |
| 25°   | 1680.6 | 1624.2 | 1508.0 | 1435.8 | 1409.2 |
| 27.5° | 1626.1 | 1566.1 | 1437.5 | 1354.7 | 1314.2 |
| 30°   | 1568.0 | 1500.9 | 1360.0 | 1270.2 | 1222.5 |
| 32.5° | 1511.5 | 1430.4 | 1286.1 | 1180.3 | 1136.2 |
| 35°   | 1448.1 | 1358.3 | 1203.3 | 1092.2 | 1053.4 |
| 37.5° | 1386.4 | 1289.5 | 1125.8 | 1004.1 | 960.2  |
| 40°   | 1321.2 | 1215.7 | 1044.6 | 919.6  | 873.8  |
| 42.5° | 1254.4 | 1141.6 | 963.7  | 833.2  | 789.3  |
| 45°   | 1183.9 | 1065.8 | 880.9  | 755.7  | 713.4  |
| 47.5° | 1116.9 | 991.9  | 801.6  | 676.5  | 637.7  |
| 50°   | 1043.0 | 917.9  | 724.1  | 602.4  | 565.6  |
| 52.5° | 970.6  | 838.5  | 650.1  | 533.8  | 500.4  |
| 55°   | 900.2  | 762.7  | 572.5  | 466.9  | 433.4  |
| 57.5° | 828.0  | 687.1  | 503.9  | 405.2  | 377.0  |
| 60°   | 754.0  | 613.1  | 431.5  | 341.9  | 313.6  |
| 62.5° | 681.8  | 540.9  | 369.9  | 285.4  | 271.4  |
| 65°   | 607.8  | 465.1  | 306.5  | 246.7  | 241.3  |
| 67.5° | 537.3  | 394.6  | 246.7  | 216.7  | 211.4  |
| 70°   | 463.4  | 325.9  | 204.3  | 186.7  | 179.6  |
| 72.5° | 392.9  | 262.4  | 170.9  | 156.8  | 153.3  |
| 75°   | 324.1  | 200.7  | 140.9  | 128.6  | 126.9  |
| 77.5° | 255.5  | 142.6  | 111.1  | 103.9  | 100.3  |
| 80°   | 192.0  | 102.2  | 84.5   | 77.5   | 77.5   |
| 82.5° | 133.9  | 68.8   | 58.1   | 54.5   | 54.5   |
| 85°   | 75.7   | 38.7   | 33.4   | 33.4   | 33.4   |
| 87.5° | 28.3   | 14.0   | 14.0   | 12.3   | 12.3   |
| 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 | 12.52            | 14.04 | 12.88 | 14.36 | 14.67 | 8.48           | 10.00 | 8.84  | 10.32 | 10.63 |
|                 | 3H   | 14.28            | 15.65 | 14.66 | 15.98 | 16.34 | 9.75           | 11.11 | 10.12 | 11.44 | 11.80 |
|                 | 4H   | 14.95            | 16.23 | 15.35 | 16.58 | 16.96 | 10.25          | 11.53 | 10.65 | 11.88 | 12.25 |
|                 | 6H   | 15.44            | 16.62 | 15.85 | 16.99 | 17.38 | 10.63          | 11.81 | 11.04 | 12.18 | 12.57 |
|                 | 8H   | 15.61            | 16.73 | 16.03 | 17.12 | 17.52 | 10.75          | 11.88 | 11.18 | 12.27 | 12.67 |
|                 | 12H  | 15.71            | 16.79 | 16.14 | 17.17 | 17.60 | 10.83          | 11.91 | 11.26 | 12.29 | 12.72 |
| 4H              | 2H   | 12.62            | 13.90 | 13.02 | 14.25 | 14.63 | 9.18           | 10.46 | 9.58  | 10.80 | 11.18 |
|                 | 3H   | 14.56            | 15.62 | 14.97 | 16.02 | 16.42 | 10.62          | 11.68 | 11.03 | 12.08 | 12.48 |
|                 | 4H   | 15.31            | 16.26 | 15.74 | 16.68 | 17.12 | 11.22          | 12.17 | 11.65 | 12.59 | 13.03 |
|                 | 6H   | 15.90            | 16.73 | 16.36 | 17.17 | 17.63 | 11.71          | 12.54 | 12.16 | 12.98 | 13.44 |
|                 | 8H   | 16.11            | 16.89 | 16.58 | 17.33 | 17.80 | 11.87          | 12.64 | 12.33 | 13.09 | 13.56 |
|                 | 12H  | 16.27            | 16.96 | 16.75 | 17.44 | 17.91 | 11.98          | 12.68 | 12.47 | 13.16 | 13.63 |
| 8H              | 4H   | 15.33            | 16.11 | 15.79 | 16.55 | 17.02 | 11.57          | 12.35 | 12.04 | 12.79 | 13.26 |
|                 | 6H   | 15.97            | 16.61 | 16.46 | 17.10 | 17.58 | 12.16          | 12.80 | 12.65 | 13.29 | 13.77 |
|                 | 8H   | 16.22            | 16.80 | 16.73 | 17.30 | 17.79 | 12.38          | 12.96 | 12.89 | 13.46 | 13.95 |
|                 | 12H  | 16.42            | 16.93 | 16.93 | 17.42 | 17.99 | 12.56          | 13.07 | 13.07 | 13.56 | 14.12 |
| 12H             | 4H   | 15.31            | 16.01 | 15.80 | 16.49 | 16.96 | 11.62          | 12.31 | 12.10 | 12.79 | 13.26 |
|                 | 6H   | 15.95            | 16.53 | 16.46 | 17.04 | 17.52 | 12.22          | 12.80 | 12.74 | 13.31 | 13.80 |
|                 | 8H   | 16.23            | 16.74 | 16.74 | 17.24 | 17.80 | 12.49          | 13.00 | 13.00 | 13.50 | 14.06 |