

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: P929840

Luminaire Tested: DFN2DS-4P2F0-040DS950-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P929840  
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-4P2F0-040DS950-RLL  
Description: 2 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

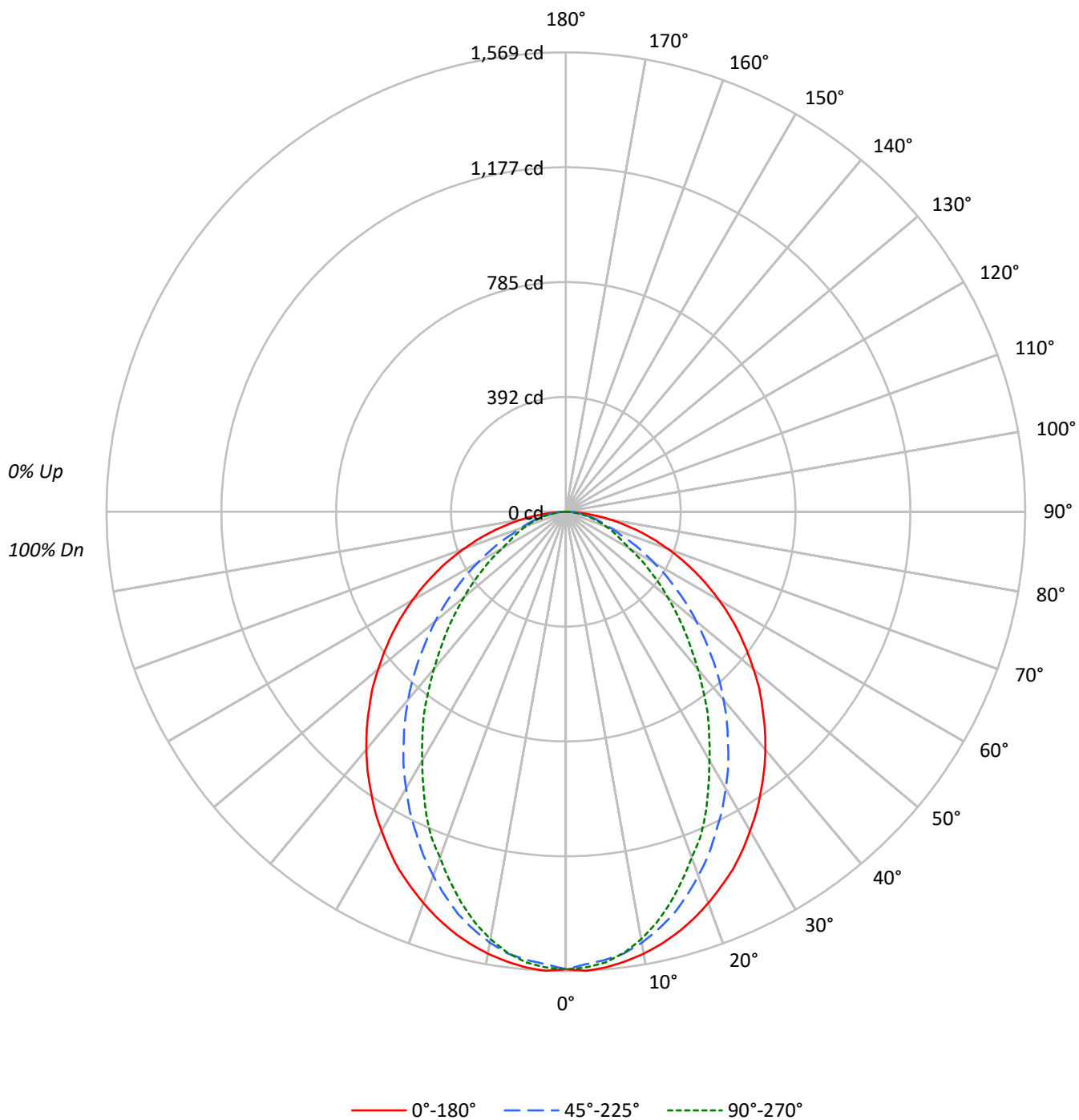
Lumens per Lamp: N/A  
Luminaire Lumens: 3213.0 lumens  
Efficiency: N/A  
Efficacy: 74.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 2.07' x L: 2.07' x H: 0')  
CIE Type: Direct

Input Watts (W): 43.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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°  | 3912 | 3912 | 3912 |
| 5°  | 3927 | 3863 | 3884 |
| 10° | 3897 | 3800 | 3768 |
| 15° | 3852 | 3687 | 3581 |
| 20° | 3790 | 3526 | 3349 |
| 25° | 3727 | 3344 | 3125 |
| 30° | 3638 | 3156 | 2837 |
| 35° | 3553 | 2952 | 2584 |
| 40° | 3466 | 2740 | 2292 |
| 45° | 3364 | 2504 | 2028 |
| 50° | 3261 | 2264 | 1768 |
| 55° | 3154 | 2006 | 1519 |
| 60° | 3030 | 1734 | 1261 |
| 65° | 2890 | 1458 | 1147 |
| 70° | 2723 | 1201 | 1055 |
| 75° | 2516 | 1094 | 986  |
| 80° | 2221 | 978  | 898  |
| 85° | 1747 | 770  | 770  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3364 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.4  | 4.6       |
| 10°-20°   | 401.9  | 12.5      |
| 20°-30°   | 564.3  | 17.6      |
| 30°-40°   | 615.1  | 19.1      |
| 40°-50°   | 565.4  | 17.6      |
| 50°-60°   | 444.0  | 13.8      |
| 60°-70°   | 289.0  | 9.0       |
| 70°-80°   | 148.8  | 4.6       |
| 80°-90°   | 38.0   | 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       |
| <hr/>     |        |           |
| 0°-30°    | 1112.7 | 34.6      |
| 0°-40°    | 1727.8 | 53.8      |
| 0°-60°    | 2737.2 | 85.2      |
| 0°-90°    | 3213.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3213.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1562 | 1562  | 1562 | 1562  | 1562 |      |
| 5°  | 1562 | 1555  | 1537 | 1550  | 1545 | 148  |
| 15° | 1486 | 1470  | 1422 | 1396  | 1381 | 419  |
| 25° | 1349 | 1304  | 1210 | 1152  | 1131 | 620  |
| 35° | 1162 | 1090  | 966  | 877   | 845  | 727  |
| 45° | 950  | 855   | 707  | 606   | 573  | 734  |
| 55° | 722  | 612   | 460  | 375   | 348  | 646  |
| 65° | 488  | 373   | 246  | 198   | 194  | 484  |
| 75° | 260  | 161   | 113  | 103   | 102  | 275  |
| 85° | 61   | 31    | 27   | 27    | 27   | 73   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1562.3 | 1562.3 | 1562.3 | 1562.3 | 1562.3 |
| 2.5°  | 1569.4 | 1562.3 | 1546.7 | 1561.0 | 1558.0 |
| 5°    | 1562.3 | 1555.2 | 1536.8 | 1549.5 | 1545.4 |
| 7.5°  | 1549.5 | 1541.1 | 1521.4 | 1526.8 | 1519.8 |
| 10°   | 1532.6 | 1522.7 | 1494.4 | 1490.1 | 1481.8 |
| 12.5° | 1511.4 | 1498.7 | 1460.4 | 1452.0 | 1436.4 |
| 15°   | 1485.9 | 1470.3 | 1422.3 | 1395.5 | 1381.4 |
| 17.5° | 1456.2 | 1433.6 | 1374.1 | 1343.1 | 1320.4 |
| 20°   | 1422.3 | 1394.0 | 1323.3 | 1288.0 | 1256.8 |
| 22.5° | 1385.6 | 1353.1 | 1270.9 | 1222.9 | 1201.9 |
| 25°   | 1348.8 | 1303.5 | 1210.2 | 1152.3 | 1131.0 |
| 27.5° | 1305.0 | 1256.8 | 1153.7 | 1087.2 | 1054.6 |
| 30°   | 1258.4 | 1204.5 | 1091.4 | 1019.4 | 981.2  |
| 32.5° | 1213.1 | 1148.0 | 1032.1 | 947.3  | 911.8  |
| 35°   | 1162.3 | 1090.1 | 965.7  | 876.6  | 845.4  |
| 37.5° | 1112.7 | 1034.9 | 903.4  | 805.8  | 770.6  |
| 40°   | 1060.4 | 975.6  | 838.4  | 738.0  | 701.3  |
| 42.5° | 1006.6 | 916.2  | 773.4  | 668.7  | 633.4  |
| 45°   | 950.1  | 855.3  | 707.0  | 606.5  | 572.6  |
| 47.5° | 896.4  | 796.1  | 643.4  | 542.9  | 511.8  |
| 50°   | 837.0  | 736.6  | 581.1  | 483.5  | 453.9  |
| 52.5° | 779.0  | 672.9  | 521.7  | 428.4  | 401.5  |
| 55°   | 722.5  | 612.2  | 459.5  | 374.7  | 347.9  |
| 57.5° | 664.5  | 551.4  | 404.4  | 325.2  | 302.6  |
| 60°   | 605.1  | 492.0  | 346.3  | 274.3  | 251.7  |
| 62.5° | 547.2  | 434.1  | 296.8  | 229.1  | 217.8  |
| 65°   | 487.8  | 373.2  | 246.0  | 198.0  | 193.6  |
| 67.5° | 431.3  | 316.7  | 198.0  | 173.9  | 169.6  |
| 70°   | 371.9  | 261.6  | 164.0  | 149.9  | 144.1  |
| 72.5° | 315.3  | 210.6  | 137.1  | 125.9  | 123.0  |
| 75°   | 260.1  | 161.1  | 113.1  | 103.2  | 101.9  |
| 77.5° | 205.1  | 114.4  | 89.1   | 83.4   | 80.5   |
| 80°   | 154.0  | 82.0   | 67.8   | 62.3   | 62.3   |
| 82.5° | 107.4  | 55.2   | 46.7   | 43.8   | 43.8   |
| 85°   | 60.8   | 31.1   | 26.8   | 26.8   | 26.8   |
| 87.5° | 22.7   | 11.2   | 11.2   | 9.9    | 9.9    |
| 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 | 15.97            | 17.50 | 16.34 | 17.81 | 18.12 | 11.93          | 13.46 | 12.30 | 13.77 | 14.08 |
|                 | 3H   | 17.74            | 19.10 | 18.12 | 19.43 | 19.79 | 13.20          | 14.56 | 13.58 | 14.89 | 15.25 |
|                 | 4H   | 18.41            | 19.69 | 18.81 | 20.03 | 20.41 | 13.70          | 14.98 | 14.10 | 15.33 | 15.71 |
|                 | 6H   | 18.89            | 20.08 | 19.31 | 20.44 | 20.84 | 14.08          | 15.27 | 14.49 | 15.63 | 16.02 |
|                 | 8H   | 19.06            | 20.19 | 19.49 | 20.58 | 20.98 | 14.21          | 15.33 | 14.63 | 15.72 | 16.12 |
|                 | 12H  | 19.16            | 20.24 | 19.59 | 20.62 | 21.05 | 14.29          | 15.37 | 14.72 | 15.75 | 16.18 |
| 4H              | 2H   | 16.08            | 17.36 | 16.48 | 17.71 | 18.09 | 12.63          | 13.91 | 13.03 | 14.26 | 14.64 |
|                 | 3H   | 18.01            | 19.07 | 18.42 | 19.47 | 19.88 | 14.07          | 15.14 | 14.48 | 15.54 | 15.94 |
|                 | 4H   | 18.76            | 19.72 | 19.19 | 20.13 | 20.57 | 14.67          | 15.63 | 15.11 | 16.04 | 16.48 |
|                 | 6H   | 19.35            | 20.18 | 19.81 | 20.63 | 21.09 | 15.16          | 15.99 | 15.62 | 16.44 | 16.90 |
|                 | 8H   | 19.57            | 20.34 | 20.03 | 20.79 | 21.26 | 15.32          | 16.10 | 15.79 | 16.54 | 17.01 |
|                 | 12H  | 19.72            | 20.41 | 20.20 | 20.89 | 21.36 | 15.44          | 16.13 | 15.92 | 16.61 | 17.08 |
| 8H              | 4H   | 18.78            | 19.56 | 19.25 | 20.01 | 20.47 | 15.03          | 15.80 | 15.49 | 16.25 | 16.72 |
|                 | 6H   | 19.42            | 20.06 | 19.92 | 20.56 | 21.03 | 15.61          | 16.26 | 16.11 | 16.75 | 17.22 |
|                 | 8H   | 19.67            | 20.25 | 20.19 | 20.76 | 21.25 | 15.83          | 16.41 | 16.35 | 16.92 | 17.41 |
|                 | 12H  | 19.88            | 20.39 | 20.39 | 20.88 | 21.44 | 16.01          | 16.52 | 16.52 | 17.02 | 17.58 |
| 12H             | 4H   | 18.77            | 19.46 | 19.25 | 19.94 | 20.41 | 15.07          | 15.76 | 15.55 | 16.24 | 16.71 |
|                 | 6H   | 19.40            | 19.98 | 19.92 | 20.49 | 20.98 | 15.68          | 16.25 | 16.19 | 16.76 | 17.25 |
|                 | 8H   | 19.69            | 20.20 | 20.20 | 20.69 | 21.25 | 15.95          | 16.46 | 16.46 | 16.95 | 17.52 |