

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: P930050

Luminaire Tested: DFN2DS-HX2F0-020DS930-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930050  
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-HX2F0-020DS930-RLL  
Description: 2 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

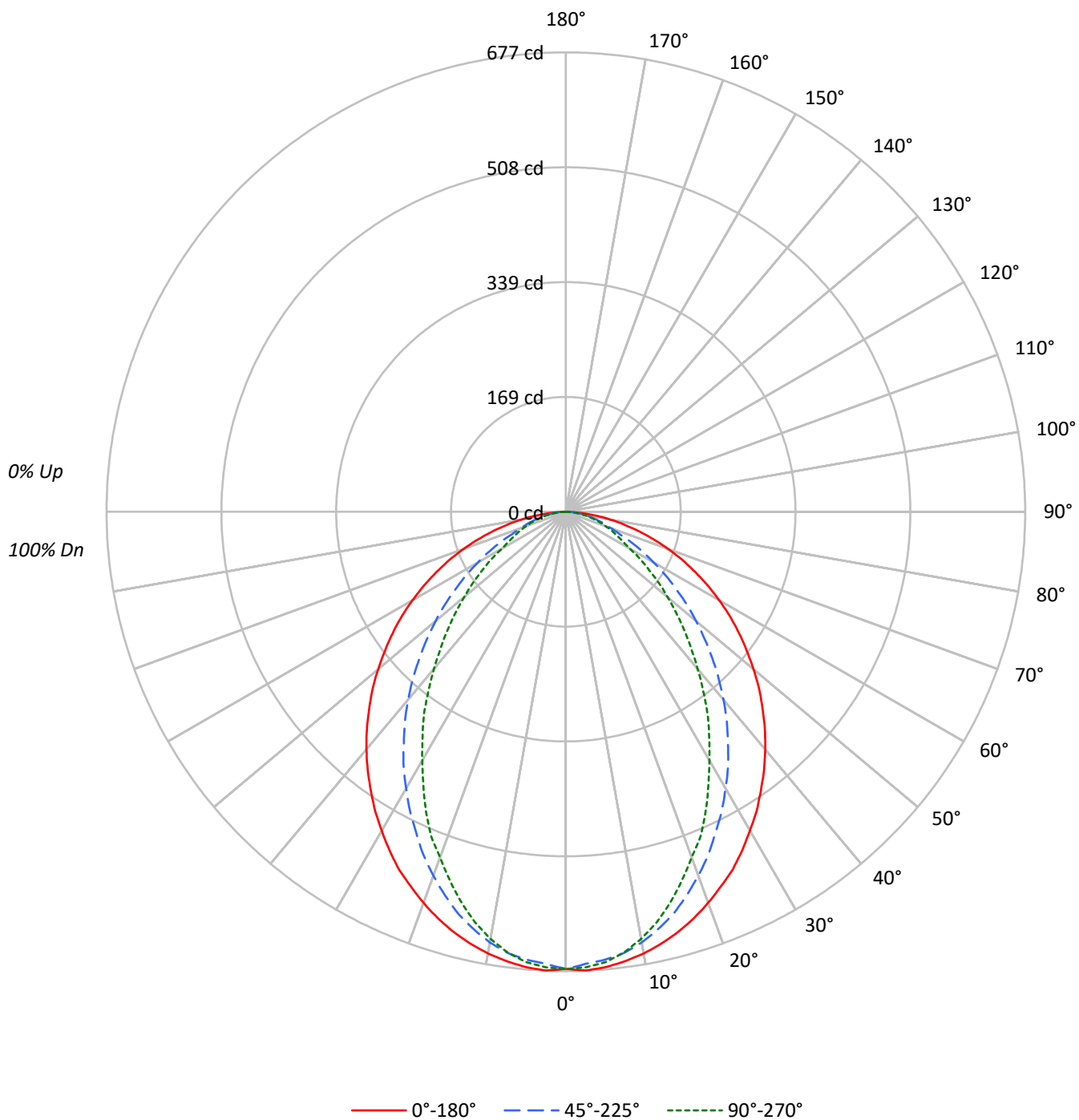
Lumens per Lamp: N/A  
Luminaire Lumens: 1385.5 lumens  
Efficiency: N/A  
Efficacy: 78.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 2.3' x L: 1.99' x H: 0')  
CIE Type: Direct

Input Watts (W): 17.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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°  | 1587 | 1587 | 1587 |
| 5°  | 1593 | 1567 | 1576 |
| 10° | 1581 | 1542 | 1529 |
| 15° | 1563 | 1496 | 1453 |
| 20° | 1538 | 1431 | 1359 |
| 25° | 1512 | 1357 | 1268 |
| 30° | 1476 | 1281 | 1151 |
| 35° | 1441 | 1198 | 1048 |
| 40° | 1406 | 1112 | 930  |
| 45° | 1365 | 1016 | 823  |
| 50° | 1323 | 919  | 718  |
| 55° | 1280 | 814  | 616  |
| 60° | 1230 | 704  | 512  |
| 65° | 1173 | 592  | 466  |
| 70° | 1104 | 487  | 428  |
| 75° | 1020 | 443  | 400  |
| 80° | 901  | 398  | 364  |
| 85° | 708  | 314  | 314  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1365 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 63.1   | 4.6       |
| 10°-20°   | 173.3  | 12.5      |
| 20°-30°   | 243.3  | 17.6      |
| 30°-40°   | 265.3  | 19.1      |
| 40°-50°   | 243.8  | 17.6      |
| 50°-60°   | 191.5  | 13.8      |
| 60°-70°   | 124.6  | 9.0       |
| 70°-80°   | 64.1   | 4.6       |
| 80°-90°   | 16.4   | 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°    | 479.8  | 34.6      |
| 0°-40°    | 745.1  | 53.8      |
| 0°-60°    | 1180.4 | 85.2      |
| 0°-90°    | 1385.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1385.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 674 | 674   | 674 | 674   | 674 |      |
| 5°  | 674 | 671   | 663 | 668   | 666 | 64   |
| 15° | 641 | 634   | 613 | 602   | 596 | 181  |
| 25° | 582 | 562   | 522 | 497   | 488 | 268  |
| 35° | 501 | 470   | 416 | 378   | 364 | 314  |
| 45° | 410 | 369   | 305 | 262   | 247 | 316  |
| 55° | 312 | 264   | 198 | 162   | 150 | 278  |
| 65° | 210 | 161   | 106 | 85    | 84  | 209  |
| 75° | 112 | 69    | 49  | 44    | 44  | 119  |
| 85° | 26  | 13    | 12  | 12    | 12  | 31   |
| 90° | 0   | 0     | 0   | 0     | 0   |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 673.7 | 673.7 | 673.7 | 673.7 | 673.7 |
| 2.5°  | 676.7 | 673.7 | 666.9 | 673.1 | 671.9 |
| 5°    | 673.7 | 670.7 | 662.7 | 668.2 | 666.3 |
| 7.5°  | 668.2 | 664.6 | 656.0 | 658.4 | 655.3 |
| 10°   | 660.9 | 656.6 | 644.4 | 642.5 | 639.0 |
| 12.5° | 651.8 | 646.2 | 629.8 | 626.2 | 619.4 |
| 15°   | 640.8 | 634.0 | 613.3 | 601.7 | 595.7 |
| 17.5° | 628.0 | 618.2 | 592.6 | 579.1 | 569.4 |
| 20°   | 613.3 | 601.1 | 570.7 | 555.4 | 542.0 |
| 22.5° | 597.5 | 583.5 | 548.1 | 527.4 | 518.3 |
| 25°   | 581.7 | 562.1 | 521.8 | 496.9 | 487.7 |
| 27.5° | 562.8 | 542.0 | 497.5 | 468.8 | 454.8 |
| 30°   | 542.6 | 519.4 | 470.7 | 439.6 | 423.1 |
| 32.5° | 523.1 | 495.0 | 445.1 | 408.5 | 393.2 |
| 35°   | 501.1 | 470.1 | 416.5 | 378.0 | 364.5 |
| 37.5° | 479.8 | 446.2 | 389.6 | 347.5 | 332.3 |
| 40°   | 457.2 | 420.7 | 361.5 | 318.3 | 302.4 |
| 42.5° | 434.1 | 395.1 | 333.5 | 288.3 | 273.2 |
| 45°   | 409.7 | 368.8 | 304.9 | 261.5 | 246.9 |
| 47.5° | 386.6 | 343.3 | 277.4 | 234.1 | 220.7 |
| 50°   | 361.0 | 317.7 | 250.6 | 208.5 | 195.8 |
| 52.5° | 335.9 | 290.1 | 224.9 | 184.8 | 173.2 |
| 55°   | 311.5 | 264.0 | 198.1 | 161.6 | 150.0 |
| 57.5° | 286.6 | 237.7 | 174.4 | 140.3 | 130.5 |
| 60°   | 261.0 | 212.1 | 149.4 | 118.3 | 108.6 |
| 62.5° | 235.9 | 187.2 | 128.0 | 98.8  | 93.9  |
| 65°   | 210.4 | 161.0 | 106.1 | 85.4  | 83.5  |
| 67.5° | 186.0 | 136.5 | 85.4  | 75.0  | 73.2  |
| 70°   | 160.3 | 112.8 | 70.7  | 64.6  | 62.2  |
| 72.5° | 135.9 | 90.8  | 59.1  | 54.3  | 53.1  |
| 75°   | 112.1 | 69.4  | 48.7  | 44.5  | 43.9  |
| 77.5° | 88.4  | 49.4  | 38.4  | 35.9  | 34.7  |
| 80°   | 66.4  | 35.4  | 29.3  | 26.8  | 26.8  |
| 82.5° | 46.3  | 23.8  | 20.1  | 18.9  | 18.9  |
| 85°   | 26.2  | 13.4  | 11.6  | 11.6  | 11.6  |
| 87.5° | 9.8   | 4.9   | 4.9   | 4.2   | 4.2   |
| 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 | 12.84            | 14.36 | 13.20 | 14.67 | 14.99 | 8.80           | 10.33 | 9.17  | 10.64 | 10.95 |
|                 | 3H   | 14.60            | 15.97 | 14.98 | 16.30 | 16.66 | 10.07          | 11.43 | 10.45 | 11.76 | 12.12 |
|                 | 4H   | 15.27            | 16.55 | 15.67 | 16.90 | 17.28 | 10.57          | 11.85 | 10.97 | 12.20 | 12.58 |
|                 | 6H   | 15.76            | 16.94 | 16.17 | 17.31 | 17.70 | 10.95          | 12.13 | 11.36 | 12.50 | 12.89 |
|                 | 8H   | 15.92            | 17.05 | 16.35 | 17.44 | 17.84 | 11.07          | 12.20 | 11.50 | 12.59 | 12.99 |
|                 | 12H  | 16.03            | 17.11 | 16.46 | 17.49 | 17.92 | 11.16          | 12.23 | 11.59 | 12.62 | 13.04 |
| 4H              | 2H   | 12.94            | 14.22 | 13.34 | 14.57 | 14.95 | 9.50           | 10.78 | 9.90  | 11.13 | 11.51 |
|                 | 3H   | 14.88            | 15.94 | 15.29 | 16.34 | 16.74 | 10.94          | 12.00 | 11.35 | 12.40 | 12.80 |
|                 | 4H   | 15.62            | 16.58 | 16.06 | 17.00 | 17.44 | 11.54          | 12.50 | 11.97 | 12.91 | 13.35 |
|                 | 6H   | 16.22            | 17.05 | 16.67 | 17.49 | 17.95 | 12.03          | 12.86 | 12.48 | 13.30 | 13.76 |
|                 | 8H   | 16.43            | 17.21 | 16.89 | 17.65 | 18.12 | 12.19          | 12.97 | 12.65 | 13.41 | 13.88 |
|                 | 12H  | 16.58            | 17.28 | 17.07 | 17.76 | 18.23 | 12.31          | 13.00 | 12.79 | 13.48 | 13.95 |
| 8H              | 4H   | 15.65            | 16.43 | 16.11 | 16.87 | 17.34 | 11.89          | 12.67 | 12.36 | 13.11 | 13.58 |
|                 | 6H   | 16.29            | 16.93 | 16.78 | 17.42 | 17.90 | 12.48          | 13.12 | 12.98 | 13.61 | 14.09 |
|                 | 8H   | 16.54            | 17.11 | 17.05 | 17.62 | 18.11 | 12.70          | 13.28 | 13.21 | 13.79 | 14.27 |
|                 | 12H  | 16.74            | 17.25 | 17.25 | 17.74 | 18.31 | 12.88          | 13.39 | 13.39 | 13.88 | 14.45 |
| 12H             | 4H   | 15.63            | 16.33 | 16.12 | 16.81 | 17.28 | 11.94          | 12.63 | 12.42 | 13.11 | 13.58 |
|                 | 6H   | 16.27            | 16.85 | 16.78 | 17.36 | 17.84 | 12.54          | 13.12 | 13.06 | 13.63 | 14.12 |
|                 | 8H   | 16.55            | 17.06 | 17.06 | 17.55 | 18.12 | 12.82          | 13.33 | 13.32 | 13.82 | 14.38 |

END OF REPORT