

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: P930428

Luminaire Tested: DFN2DS-PN2F0-020DS930-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930428  
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-PN2F0-020DS930-RLL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

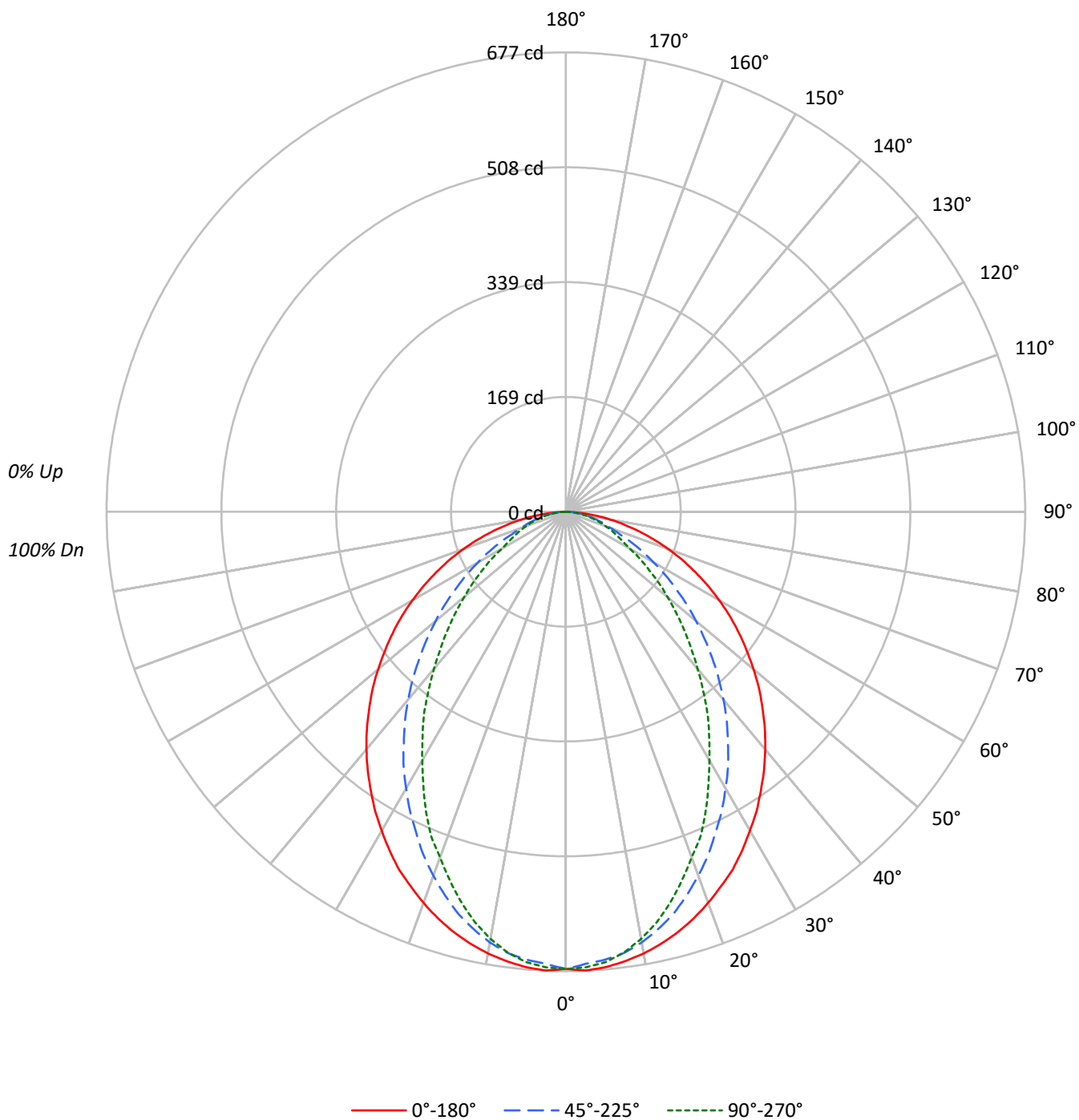
Lumens per Lamp: N/A  
Luminaire Lumens: 1385.5 lumens  
Efficiency: N/A  
Efficacy: 71.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 2.29' x L: 2.17' x H: 0')  
CIE Type: Direct

Input Watts (W): 19.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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°  | 1459 | 1459 | 1459 |
| 5°  | 1465 | 1441 | 1449 |
| 10° | 1454 | 1417 | 1405 |
| 15° | 1437 | 1375 | 1336 |
| 20° | 1414 | 1315 | 1249 |
| 25° | 1390 | 1247 | 1165 |
| 30° | 1357 | 1177 | 1058 |
| 35° | 1325 | 1101 | 964  |
| 40° | 1293 | 1022 | 855  |
| 45° | 1255 | 934  | 756  |
| 50° | 1216 | 844  | 660  |
| 55° | 1176 | 748  | 566  |
| 60° | 1131 | 647  | 470  |
| 65° | 1078 | 544  | 428  |
| 70° | 1015 | 448  | 394  |
| 75° | 938  | 408  | 367  |
| 80° | 828  | 365  | 334  |
| 85° | 651  | 288  | 288  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1255 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 | 12.55            | 14.07 | 12.91 | 14.38 | 14.70 | 8.51           | 10.03 | 8.88  | 10.35 | 10.66 |
|                 | 3H   | 14.31            | 15.68 | 14.69 | 16.00 | 16.37 | 9.78           | 11.14 | 10.15 | 11.47 | 11.83 |
|                 | 4H   | 14.98            | 16.26 | 15.38 | 16.61 | 16.99 | 10.28          | 11.56 | 10.68 | 11.91 | 12.29 |
|                 | 6H   | 15.47            | 16.65 | 15.88 | 17.02 | 17.41 | 10.66          | 11.84 | 11.07 | 12.21 | 12.60 |
|                 | 8H   | 15.63            | 16.76 | 16.06 | 17.15 | 17.55 | 10.78          | 11.91 | 11.21 | 12.30 | 12.70 |
|                 | 12H  | 15.73            | 16.81 | 16.17 | 17.20 | 17.62 | 10.86          | 11.94 | 11.29 | 12.32 | 12.75 |
| 4H              | 2H   | 12.65            | 13.93 | 13.05 | 14.28 | 14.66 | 9.21           | 10.49 | 9.61  | 10.84 | 11.21 |
|                 | 3H   | 14.58            | 15.65 | 14.99 | 16.05 | 16.45 | 10.65          | 11.71 | 11.06 | 12.11 | 12.51 |
|                 | 4H   | 15.33            | 16.29 | 15.76 | 16.70 | 17.14 | 11.25          | 12.20 | 11.68 | 12.62 | 13.06 |
|                 | 6H   | 15.92            | 16.76 | 16.38 | 17.20 | 17.66 | 11.73          | 12.57 | 12.19 | 13.01 | 13.47 |
|                 | 8H   | 16.14            | 16.92 | 16.60 | 17.36 | 17.83 | 11.90          | 12.67 | 12.36 | 13.12 | 13.58 |
|                 | 12H  | 16.29            | 16.99 | 16.77 | 17.47 | 17.94 | 12.01          | 12.71 | 12.50 | 13.19 | 13.66 |
| 8H              | 4H   | 15.36            | 16.13 | 15.82 | 16.58 | 17.05 | 11.60          | 12.38 | 12.06 | 12.82 | 13.29 |
|                 | 6H   | 15.99            | 16.64 | 16.49 | 17.13 | 17.61 | 12.19          | 12.83 | 12.68 | 13.32 | 13.80 |
|                 | 8H   | 16.24            | 16.82 | 16.76 | 17.33 | 17.82 | 12.41          | 12.98 | 12.92 | 13.49 | 13.98 |
|                 | 12H  | 16.45            | 16.96 | 16.96 | 17.45 | 18.02 | 12.59          | 13.10 | 13.10 | 13.59 | 14.15 |
| 12H             | 4H   | 15.34            | 16.04 | 15.82 | 16.51 | 16.98 | 11.64          | 12.34 | 12.13 | 12.82 | 13.29 |
|                 | 6H   | 15.98            | 16.55 | 16.49 | 17.06 | 17.55 | 12.25          | 12.83 | 12.76 | 13.34 | 13.82 |
|                 | 8H   | 16.26            | 16.77 | 16.77 | 17.26 | 17.83 | 12.52          | 13.03 | 13.03 | 13.52 | 14.09 |