

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: P1056104

Luminaire Tested: S124R3DR-H1020D930-X4F0-XX-UDD-FLL-S

Issue Date: 7/25/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1056104  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2503-402-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 7/25/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S124R3DR-H1020D930-X4F0-XX-UDD-FLL-S  
Description: DEFINE 4, SILVER 3-INCH REGRESSED DIRECT RECESSED HOUSING WITH FROSTED LENS  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: 3000K CCT, 90 CRI LEDS  
Ballast/Driver: -

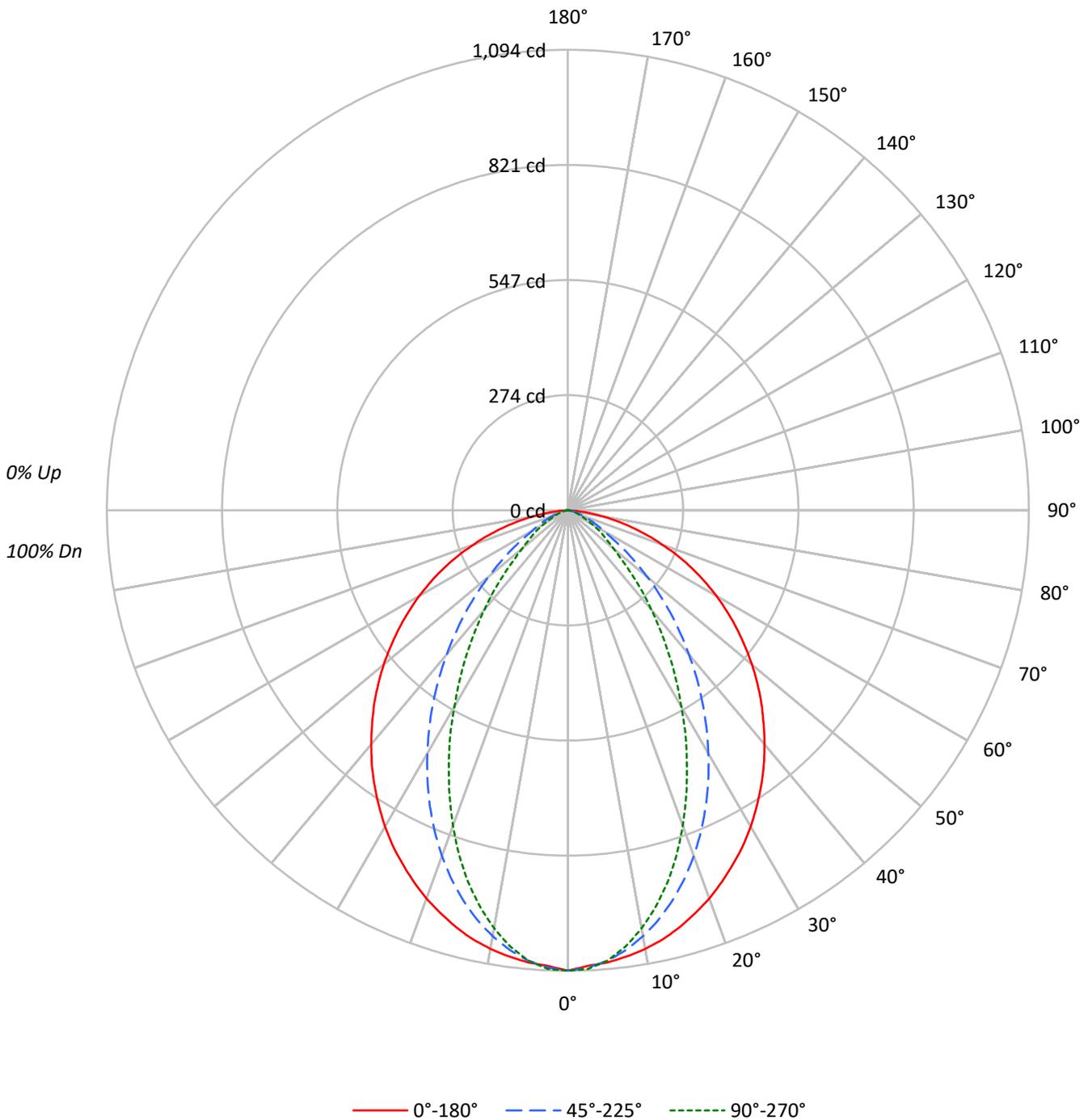
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1768.2 lumens  
Efficiency: N/A  
Efficacy: 57.2 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 0.87 / 1.03  
Luminous Opening: Rectangular (W 0.31' x L: 3.9' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 30.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
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   | 111 | 107 | 104 | 101 | 108 | 105 | 102 | 99  | 101 | 98  | 96  | 97  | 95  | 93  | 94  | 92  | 90  | 89  |
| 2   | 103 | 96  | 91  | 86  | 101 | 94  | 89  | 85  | 91  | 87  | 83  | 88  | 84  | 81  | 85  | 82  | 79  | 78  |
| 3   | 95  | 87  | 80  | 74  | 93  | 85  | 79  | 74  | 82  | 77  | 73  | 80  | 75  | 71  | 77  | 73  | 70  | 68  |
| 4   | 89  | 78  | 71  | 65  | 86  | 77  | 70  | 65  | 75  | 69  | 64  | 73  | 67  | 63  | 71  | 66  | 62  | 60  |
| 5   | 82  | 71  | 64  | 58  | 80  | 70  | 63  | 58  | 68  | 62  | 57  | 66  | 61  | 56  | 65  | 60  | 56  | 54  |
| 6   | 77  | 65  | 57  | 52  | 75  | 64  | 57  | 52  | 63  | 56  | 51  | 61  | 55  | 51  | 60  | 54  | 50  | 48  |
| 7   | 72  | 60  | 52  | 47  | 70  | 59  | 52  | 47  | 58  | 51  | 46  | 56  | 50  | 46  | 55  | 50  | 46  | 44  |
| 8   | 67  | 55  | 48  | 42  | 66  | 55  | 47  | 42  | 53  | 47  | 42  | 52  | 46  | 42  | 51  | 46  | 42  | 40  |
| 9   | 63  | 51  | 44  | 39  | 62  | 51  | 44  | 39  | 50  | 43  | 39  | 49  | 43  | 38  | 48  | 42  | 38  | 37  |
| 10  | 60  | 48  | 41  | 36  | 59  | 47  | 40  | 36  | 46  | 40  | 36  | 45  | 40  | 35  | 45  | 39  | 35  | 34  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 9668 | 9668 | 9668 |
| 5°  | 9570 | 9534 | 9534 |
| 10° | 9498 | 9223 | 9050 |
| 15° | 9385 | 8779 | 8369 |
| 20° | 9235 | 8220 | 7501 |
| 25° | 9049 | 7558 | 6516 |
| 30° | 8856 | 6808 | 5488 |
| 35° | 8627 | 6011 | 4517 |
| 40° | 8379 | 5159 | 3561 |
| 45° | 8122 | 4290 | 2661 |
| 50° | 7843 | 3375 | 1946 |
| 55° | 7533 | 2496 | 1554 |
| 60° | 7202 | 1728 | 1188 |
| 65° | 6774 | 1341 | 872  |
| 70° | 6132 | 949  | 685  |
| 75° | 5356 | 659  | 523  |
| 80° | 4302 | 519  | 468  |
| 85° | 2374 | 416  | 416  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 8122 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 101.4  | 5.7       |
| 10°-20°   | 271.0  | 15.3      |
| 20°-30°   | 361.5  | 20.4      |
| 30°-40°   | 364.0  | 20.6      |
| 40°-50°   | 298.5  | 16.9      |
| 50°-60°   | 204.0  | 11.5      |
| 60°-70°   | 114.0  | 6.4       |
| 70°-80°   | 45.2   | 2.6       |
| 80°-90°   | 8.6    | 0.5       |
| 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°    | 733.9  | 41.5      |
| 0°-40°    | 1097.9 | 62.1      |
| 0°-60°    | 1600.4 | 90.5      |
| 0°-90°    | 1768.2 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1768.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1094 | 1094  | 1094 | 1094  | 1094 |      |
| 5°  | 1078 | 1090  | 1074 | 1069  | 1074 | 102  |
| 15° | 1025 | 1014  | 959  | 926   | 914  | 289  |
| 25° | 928  | 882   | 775  | 696   | 668  | 427  |
| 35° | 799  | 715   | 557  | 451   | 418  | 500  |
| 45° | 650  | 530   | 343  | 241   | 213  | 501  |
| 55° | 489  | 343   | 162  | 108   | 101  | 437  |
| 65° | 324  | 163   | 64   | 46    | 42   | 320  |
| 75° | 157  | 43    | 19   | 16    | 15   | 168  |
| 85° | 23   | 4     | 4    | 4     | 4    | 33   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1093.5 | 1093.5 | 1093.5 | 1093.5 | 1093.5 |
| 2.5°  | 1083.3 | 1096.6 | 1087.4 | 1088.4 | 1090.5 |
| 5°    | 1078.3 | 1090.5 | 1074.2 | 1069.1 | 1074.2 |
| 7.5°  | 1069.1 | 1078.3 | 1053.8 | 1043.6 | 1045.7 |
| 10°   | 1057.9 | 1060.9 | 1027.3 | 1010.0 | 1008.0 |
| 12.5° | 1043.6 | 1039.6 | 995.8  | 970.3  | 964.2  |
| 15°   | 1025.3 | 1014.1 | 959.1  | 925.5  | 914.3  |
| 17.5° | 1003.9 | 984.6  | 918.4  | 874.6  | 858.3  |
| 20°   | 981.5  | 953.0  | 873.6  | 817.6  | 797.2  |
| 22.5° | 955.1  | 919.4  | 825.7  | 757.5  | 734.1  |
| 25°   | 927.6  | 881.7  | 774.8  | 696.4  | 667.9  |
| 27.5° | 899.1  | 843.1  | 721.9  | 634.3  | 605.8  |
| 30°   | 867.5  | 801.3  | 666.9  | 572.2  | 537.6  |
| 32.5° | 833.9  | 758.5  | 611.9  | 511.1  | 478.5  |
| 35°   | 799.3  | 714.8  | 556.9  | 451.1  | 418.5  |
| 37.5° | 763.6  | 670.0  | 502.0  | 394.0  | 361.5  |
| 40°   | 726.0  | 624.1  | 447.0  | 340.1  | 308.5  |
| 42.5° | 687.3  | 577.3  | 394.0  | 289.2  | 259.6  |
| 45°   | 649.6  | 530.5  | 343.1  | 241.3  | 212.8  |
| 47.5° | 609.9  | 483.6  | 293.2  | 196.5  | 172.1  |
| 50°   | 570.2  | 436.8  | 245.4  | 157.8  | 141.5  |
| 52.5° | 529.5  | 390.0  | 201.6  | 129.3  | 118.1  |
| 55°   | 488.7  | 343.1  | 161.9  | 107.9  | 100.8  |
| 57.5° | 448.0  | 296.3  | 125.2  | 91.6   | 83.5   |
| 60°   | 407.3  | 250.5  | 97.7   | 74.3   | 67.2   |
| 62.5° | 365.5  | 204.7  | 80.4   | 59.1   | 52.9   |
| 65°   | 323.8  | 162.9  | 64.1   | 45.8   | 41.7   |
| 67.5° | 282.0  | 124.2  | 48.9   | 35.6   | 32.6   |
| 70°   | 237.2  | 88.6   | 36.7   | 27.5   | 26.5   |
| 72.5° | 198.5  | 60.1   | 26.5   | 21.4   | 20.4   |
| 75°   | 156.8  | 42.8   | 19.3   | 16.3   | 15.3   |
| 77.5° | 121.2  | 27.5   | 14.3   | 13.2   | 12.2   |
| 80°   | 84.5   | 15.3   | 10.2   | 9.2    | 9.2    |
| 82.5° | 51.9   | 8.1    | 7.1    | 6.1    | 6.1    |
| 85°   | 23.4   | 4.1    | 4.1    | 4.1    | 4.1    |
| 87.5° | 4.1    | 2.0    | 2.0    | 2.0    | 2.0    |
| 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 | 18.61            | 20.01 | 18.97 | 20.33 | 20.64 | 9.69           | 11.10 | 10.06 | 11.41 | 11.73 |
|                 | 3H   | 20.19            | 21.44 | 20.57 | 21.77 | 22.14 | 10.29          | 11.54 | 10.67 | 11.87 | 12.23 |
|                 | 4H   | 20.79            | 21.96 | 21.19 | 22.31 | 22.69 | 10.44          | 11.61 | 10.85 | 11.96 | 12.34 |
|                 | 6H   | 21.22            | 22.29 | 21.63 | 22.66 | 23.06 | 10.55          | 11.63 | 10.97 | 12.00 | 12.39 |
|                 | 8H   | 21.33            | 22.35 | 21.76 | 22.74 | 23.15 | 10.57          | 11.59 | 11.00 | 11.98 | 12.39 |
|                 | 12H  | 21.38            | 22.35 | 21.81 | 22.73 | 23.16 | 10.58          | 11.56 | 11.01 | 11.94 | 12.37 |
| 4H              | 2H   | 18.46            | 19.63 | 18.86 | 19.98 | 20.36 | 10.28          | 11.45 | 10.68 | 11.80 | 12.18 |
|                 | 3H   | 20.11            | 21.07 | 20.52 | 21.47 | 21.87 | 10.99          | 11.95 | 11.40 | 12.35 | 12.75 |
|                 | 4H   | 20.71            | 21.57 | 21.15 | 21.99 | 22.43 | 11.20          | 12.05 | 11.63 | 12.47 | 12.91 |
|                 | 6H   | 21.21            | 21.95 | 21.67 | 22.39 | 22.86 | 11.36          | 12.10 | 11.82 | 12.55 | 13.01 |
|                 | 8H   | 21.35            | 22.04 | 21.82 | 22.49 | 22.96 | 11.39          | 12.09 | 11.86 | 12.53 | 13.00 |
|                 | 12H  | 21.42            | 22.04 | 21.91 | 22.52 | 22.99 | 11.42          | 12.03 | 11.91 | 12.52 | 12.99 |
| 8H              | 4H   | 20.61            | 21.30 | 21.07 | 21.75 | 22.21 | 11.47          | 12.16 | 11.93 | 12.60 | 13.07 |
|                 | 6H   | 21.09            | 21.66 | 21.59 | 22.15 | 22.63 | 11.67          | 12.24 | 12.17 | 12.73 | 13.21 |
|                 | 8H   | 21.23            | 21.74 | 21.75 | 22.25 | 22.75 | 11.73          | 12.24 | 12.25 | 12.75 | 13.24 |
|                 | 12H  | 21.32            | 21.77 | 21.84 | 22.27 | 22.83 | 11.79          | 12.24 | 12.30 | 12.73 | 13.30 |
| 12H             | 4H   | 20.57            | 21.18 | 21.05 | 21.66 | 22.14 | 11.49          | 12.11 | 11.98 | 12.59 | 13.06 |
|                 | 6H   | 21.03            | 21.54 | 21.55 | 22.06 | 22.55 | 11.70          | 12.21 | 12.22 | 12.72 | 13.21 |
|                 | 8H   | 21.20            | 21.65 | 21.71 | 22.14 | 22.71 | 11.79          | 12.24 | 12.31 | 12.74 | 13.30 |