

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P243481

Luminaire Tested: S124DRP-H1020D935-X4F0-XX-UDD-F-W

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-2024  
Report Number: P243481  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-84)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: S124DRP-H1020D935-X4F0-XX-UDD-F-W  
Description: DEFINE 4 DIRECT RECESSED WITH SATIN FLUSH DIFFUSER.  
HIGH PERFORMANCE LIGHT ENGINE  
Light Source: (184) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: -

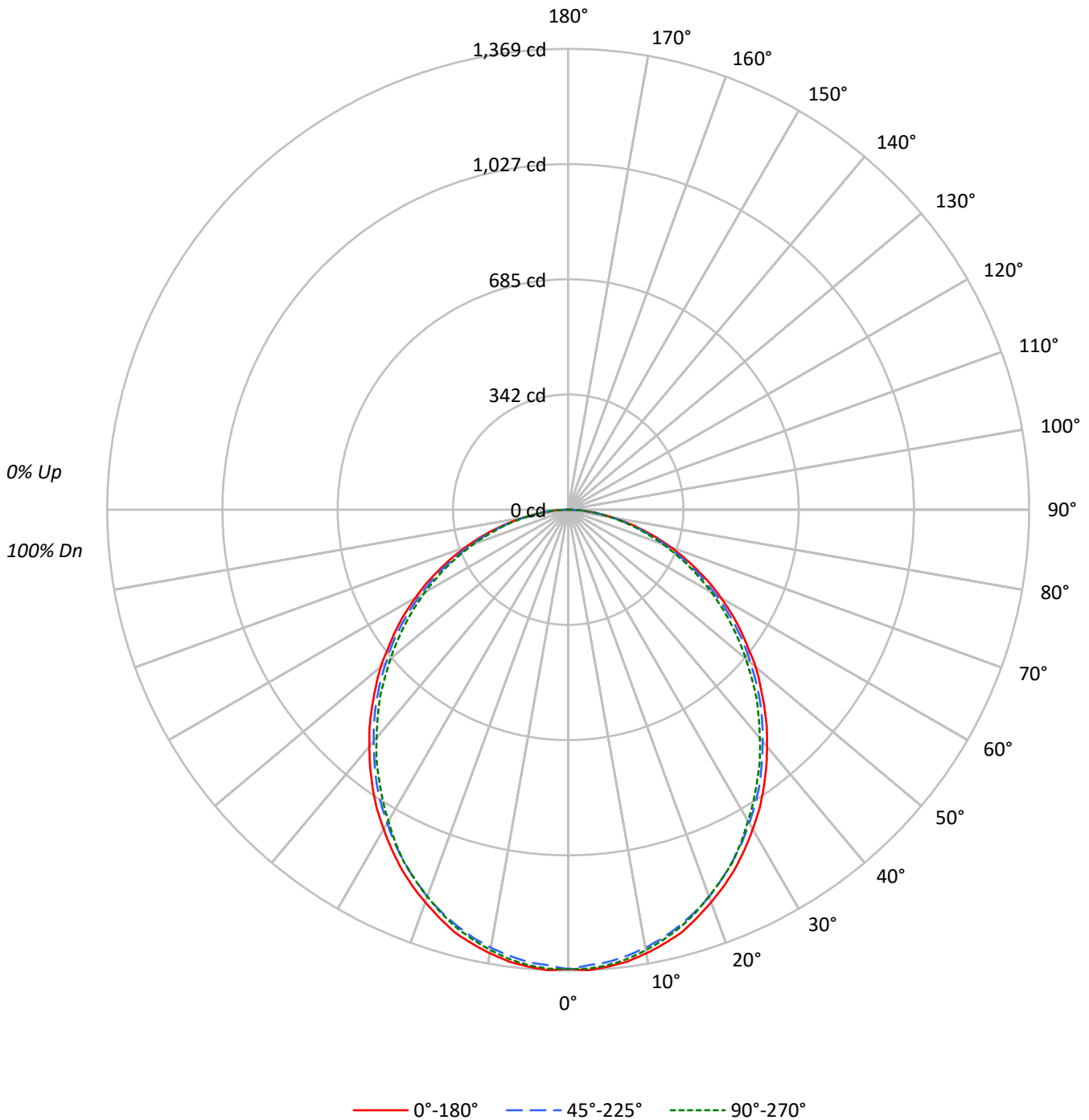
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3513.1 lumens  
Efficiency: N/A  
Efficacy: 111.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.17 / 1.3  
Luminous Opening: Rectangular (W 0.31' x L: 3.88' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 31.5  
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  | 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 |    |    |    |    | 100 |   |  |   |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  | 94  | 91  | 89  | 90  | 88  | 86  | 84  |    |    |    |    | 84  |   |  |   |
| 2   | 99  | 91  | 84  | 79  | 97  | 89  | 83  | 78  | 86  | 80  | 76  | 82  | 78  | 74  | 79  | 76  | 73  | 70  |    |    |    |    | 70  |   |  |   |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  | 73  | 67  | 63  | 70  | 66  | 62  | 60  |    |    |    |    | 60  |   |  |   |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 67  | 60  | 55  | 65  | 59  | 54  | 63  | 58  | 53  | 51  |    |    |    |    | 51  |   |  |   |
| 5   | 77  | 64  | 55  | 48  | 74  | 63  | 54  | 48  | 61  | 53  | 48  | 59  | 52  | 47  | 57  | 51  | 47  | 44  |    |    |    |    | 44  |   |  |   |
| 6   | 71  | 58  | 49  | 42  | 69  | 57  | 48  | 42  | 55  | 47  | 42  | 53  | 46  | 41  | 52  | 46  | 41  | 39  |    |    |    |    | 39  |   |  |   |
| 7   | 66  | 52  | 44  | 38  | 64  | 51  | 43  | 37  | 50  | 43  | 37  | 48  | 42  | 37  | 47  | 41  | 37  | 35  |    |    |    |    | 35  |   |  |   |
| 8   | 61  | 48  | 39  | 34  | 60  | 47  | 39  | 33  | 46  | 38  | 33  | 45  | 38  | 33  | 43  | 37  | 33  | 31  |    |    |    |    | 31  |   |  |   |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  | 41  | 35  | 30  | 40  | 34  | 30  | 28  |    |    |    |    | 28  |   |  |   |
| 10  | 54  | 41  | 33  | 28  | 52  | 40  | 33  | 27  | 39  | 32  | 27  | 38  | 32  | 27  | 37  | 31  | 27  | 25  |    |    |    |    | 25  |   |  |   |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 12130 | 12130 | 12130 |
| 5°  | 12157 | 12038 | 12117 |
| 10° | 12077 | 11926 | 11997 |
| 15° | 11965 | 11771 | 11822 |
| 20° | 11743 | 11574 | 11564 |
| 25° | 11522 | 11315 | 11326 |
| 30° | 11248 | 11032 | 10964 |
| 35° | 10976 | 10760 | 10627 |
| 40° | 10656 | 10424 | 10269 |
| 45° | 10343 | 10133 | 9938  |
| 50° | 10058 | 9766  | 9520  |
| 55° | 9687  | 9430  | 9137  |
| 60° | 9317  | 9001  | 8725  |
| 65° | 8874  | 8571  | 8291  |
| 70° | 8397  | 8023  | 7763  |
| 75° | 7741  | 7436  | 7209  |
| 80° | 6818  | 6706  | 6537  |
| 85° | 5997  | 5997  | 5885  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 10343 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 128.7  | 3.7       |
| 10°-20°   | 362.7  | 10.3      |
| 20°-30°   | 534.2  | 15.2      |
| 30°-40°   | 621.5  | 17.7      |
| 40°-50°   | 621.8  | 17.7      |
| 50°-60°   | 543.8  | 15.5      |
| 60°-70°   | 403.9  | 11.5      |
| 70°-80°   | 230.1  | 6.6       |
| 80°-90°   | 66.3   | 1.9       |
| 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°    | 1025.6 | 29.2      |
| 0°-40°    | 1647.1 | 46.9      |
| 0°-60°    | 2812.8 | 80.1      |
| 0°-90°    | 3513.1 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3513.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1365 | 1365  | 1365 | 1365  | 1365 |      |
| 5°  | 1362 | 1360  | 1349 | 1359  | 1358 | 129  |
| 15° | 1300 | 1294  | 1279 | 1287  | 1285 | 366  |
| 25° | 1175 | 1169  | 1154 | 1157  | 1155 | 541  |
| 35° | 1012 | 1003  | 992  | 983   | 979  | 632  |
| 45° | 823  | 820   | 806  | 794   | 791  | 635  |
| 55° | 625  | 621   | 608  | 595   | 590  | 559  |
| 65° | 422  | 419   | 408  | 399   | 394  | 419  |
| 75° | 225  | 221   | 216  | 212   | 210  | 239  |
| 85° | 59   | 58    | 59   | 57    | 58   | 67   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1364.6 | 1364.6 | 1364.6 | 1364.6 | 1364.6 |
| 2.5°  | 1369.1 | 1365.8 | 1354.7 | 1365.8 | 1364.6 |
| 5°    | 1362.4 | 1360.2 | 1349.1 | 1359.1 | 1358.0 |
| 7.5°  | 1353.5 | 1349.1 | 1336.9 | 1346.9 | 1345.8 |
| 10°   | 1338.0 | 1334.7 | 1321.3 | 1331.3 | 1329.1 |
| 12.5° | 1320.2 | 1316.9 | 1302.5 | 1310.2 | 1308.0 |
| 15°   | 1300.2 | 1293.6 | 1279.1 | 1286.9 | 1284.7 |
| 17.5° | 1271.4 | 1266.9 | 1252.5 | 1259.2 | 1255.8 |
| 20°   | 1241.4 | 1235.8 | 1223.6 | 1224.7 | 1222.5 |
| 22.5° | 1209.2 | 1203.6 | 1189.2 | 1193.6 | 1189.2 |
| 25°   | 1174.8 | 1169.2 | 1153.7 | 1157.0 | 1154.8 |
| 27.5° | 1135.9 | 1130.4 | 1115.9 | 1117.0 | 1112.6 |
| 30°   | 1095.9 | 1089.3 | 1074.8 | 1073.7 | 1068.2 |
| 32.5° | 1056.0 | 1049.3 | 1034.9 | 1030.4 | 1024.9 |
| 35°   | 1011.5 | 1002.7 | 991.6  | 982.7  | 979.3  |
| 37.5° | 966.0  | 961.6  | 944.9  | 939.4  | 934.9  |
| 40°   | 918.3  | 913.8  | 898.3  | 890.5  | 885.0  |
| 42.5° | 872.8  | 867.2  | 852.8  | 841.7  | 837.2  |
| 45°   | 822.8  | 819.5  | 806.1  | 793.9  | 790.6  |
| 47.5° | 773.9  | 772.8  | 756.2  | 743.9  | 738.4  |
| 50°   | 727.3  | 720.6  | 706.2  | 695.1  | 688.4  |
| 52.5° | 672.9  | 671.8  | 659.6  | 645.1  | 639.6  |
| 55°   | 625.1  | 620.7  | 608.5  | 595.2  | 589.6  |
| 57.5° | 575.2  | 573.0  | 557.4  | 546.3  | 540.8  |
| 60°   | 524.1  | 519.7  | 506.3  | 496.3  | 490.8  |
| 62.5° | 475.2  | 469.7  | 457.5  | 447.5  | 441.9  |
| 65°   | 421.9  | 418.6  | 407.5  | 398.6  | 394.2  |
| 67.5° | 372.0  | 367.5  | 356.4  | 348.7  | 344.2  |
| 70°   | 323.1  | 316.5  | 308.7  | 302.0  | 298.7  |
| 72.5° | 274.3  | 268.7  | 262.0  | 257.6  | 253.2  |
| 75°   | 225.4  | 221.0  | 216.5  | 212.1  | 209.9  |
| 77.5° | 178.8  | 174.3  | 172.1  | 171.0  | 168.8  |
| 80°   | 133.2  | 131.0  | 131.0  | 129.9  | 127.7  |
| 82.5° | 94.4   | 92.2   | 92.2   | 92.2   | 91.1   |
| 85°   | 58.8   | 57.7   | 58.8   | 56.6   | 57.7   |
| 87.5° | 27.8   | 27.8   | 28.9   | 27.8   | 28.9   |
| 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 | 19.97            | 21.58 | 20.33 | 21.90 | 22.21 | 19.62          | 21.24 | 19.99 | 21.55 | 21.86 |
|                 | 3H   | 21.72            | 23.18 | 22.10 | 23.51 | 23.87 | 21.33          | 22.79 | 21.71 | 23.12 | 23.48 |
|                 | 4H   | 22.38            | 23.75 | 22.78 | 24.10 | 24.48 | 21.98          | 23.36 | 22.38 | 23.70 | 24.08 |
|                 | 6H   | 22.85            | 24.13 | 23.26 | 24.49 | 24.88 | 22.47          | 23.74 | 22.88 | 24.11 | 24.50 |
|                 | 8H   | 23.01            | 24.22 | 23.43 | 24.61 | 25.01 | 22.63          | 23.85 | 23.06 | 24.24 | 24.64 |
|                 | 12H  | 23.11            | 24.28 | 23.54 | 24.66 | 25.09 | 22.75          | 23.91 | 23.17 | 24.29 | 24.72 |
| 4H              | 2H   | 20.54            | 21.92 | 20.94 | 22.26 | 22.64 | 20.27          | 21.64 | 20.66 | 21.99 | 22.36 |
|                 | 3H   | 22.52            | 23.67 | 22.92 | 24.06 | 24.46 | 22.20          | 23.35 | 22.61 | 23.75 | 24.15 |
|                 | 4H   | 23.30            | 24.34 | 23.73 | 24.76 | 25.19 | 22.97          | 24.01 | 23.40 | 24.43 | 24.86 |
|                 | 6H   | 23.90            | 24.81 | 24.36 | 25.25 | 25.71 | 23.59          | 24.50 | 24.04 | 24.94 | 25.40 |
|                 | 8H   | 24.10            | 24.95 | 24.56 | 25.40 | 25.86 | 23.80          | 24.65 | 24.26 | 25.09 | 25.56 |
|                 | 12H  | 24.25            | 25.02 | 24.73 | 25.49 | 25.96 | 23.96          | 24.72 | 24.44 | 25.20 | 25.67 |
| 8H              | 4H   | 23.58            | 24.44 | 24.04 | 24.88 | 25.34 | 23.29          | 24.14 | 23.75 | 24.59 | 25.05 |
|                 | 6H   | 24.30            | 25.01 | 24.80 | 25.50 | 25.97 | 24.04          | 24.74 | 24.53 | 25.23 | 25.71 |
|                 | 8H   | 24.58            | 25.21 | 25.09 | 25.72 | 26.20 | 24.32          | 24.96 | 24.83 | 25.46 | 25.95 |
|                 | 12H  | 24.80            | 25.36 | 25.31 | 25.85 | 26.42 | 24.56          | 25.12 | 25.06 | 25.61 | 26.17 |
| 12H             | 4H   | 23.61            | 24.38 | 24.09 | 24.85 | 25.32 | 23.33          | 24.09 | 23.81 | 24.57 | 25.04 |
|                 | 6H   | 24.35            | 24.99 | 24.86 | 25.50 | 25.98 | 24.09          | 24.73 | 24.60 | 25.24 | 25.72 |
|                 | 8H   | 24.68            | 25.25 | 25.19 | 25.74 | 26.30 | 24.44          | 25.00 | 24.95 | 25.49 | 26.05 |