

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: P930926

Luminaire Tested: DFN2DS-SQ3F0-050DS840-RLL

Issue Date: 11/20/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P930926  
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-SQ3F0-050DS840-RLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

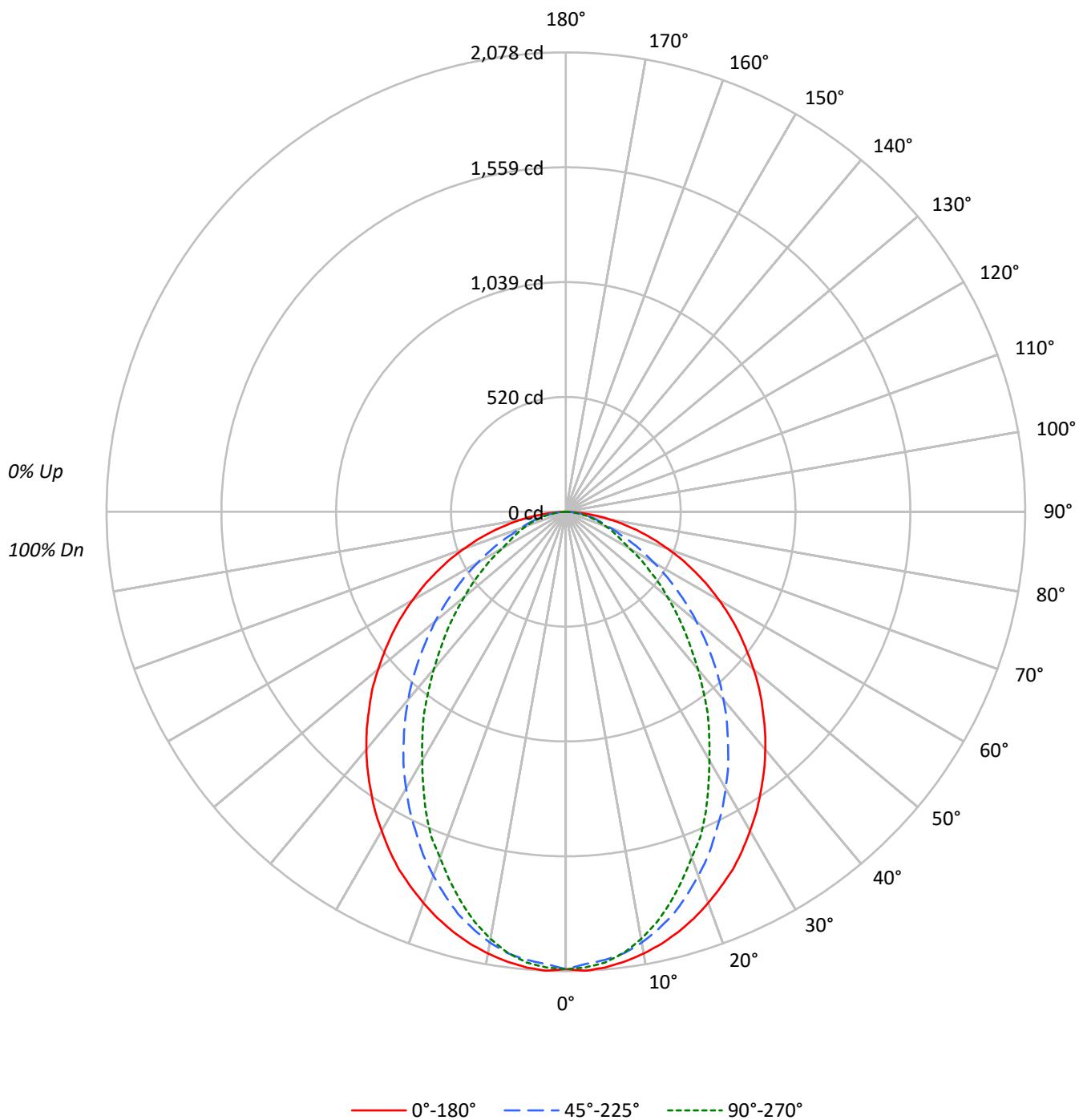
Lumens per Lamp: N/A  
Luminaire Lumens: 4254.3 lumens  
Efficiency: N/A  
Efficacy: 88.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular (W 3.06' x L: 3.06' x H: 0')  
CIE Type: Direct

Input Watts (W): 48  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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°  | 2370 | 2370 | 2370 |
| 5°  | 2379 | 2340 | 2353 |
| 10° | 2361 | 2302 | 2283 |
| 15° | 2334 | 2234 | 2170 |
| 20° | 2296 | 2137 | 2029 |
| 25° | 2258 | 2026 | 1893 |
| 30° | 2204 | 1912 | 1719 |
| 35° | 2152 | 1789 | 1566 |
| 40° | 2100 | 1660 | 1389 |
| 45° | 2039 | 1517 | 1228 |
| 50° | 1976 | 1372 | 1071 |
| 55° | 1911 | 1215 | 920  |
| 60° | 1836 | 1051 | 764  |
| 65° | 1751 | 883  | 695  |
| 70° | 1650 | 727  | 640  |
| 75° | 1525 | 663  | 597  |
| 80° | 1346 | 593  | 544  |
| 85° | 1058 | 467  | 467  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2039 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 193.9  | 4.6       |
| 10°-20°   | 532.2  | 12.5      |
| 20°-30°   | 747.2  | 17.6      |
| 30°-40°   | 814.5  | 19.1      |
| 40°-50°   | 748.6  | 17.6      |
| 50°-60°   | 587.9  | 13.8      |
| 60°-70°   | 382.7  | 9.0       |
| 70°-80°   | 197.0  | 4.6       |
| 80°-90°   | 50.3   | 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°    | 1473.3 | 34.6      |
| 0°-40°    | 2287.8 | 53.8      |
| 0°-60°    | 3624.3 | 85.2      |
| 0°-90°    | 4254.3 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4254.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 2069 | 2069  | 2069 | 2069  | 2069 |      |
| 5°  | 2069 | 2059  | 2035 | 2052  | 2046 | 196  |
| 15° | 1968 | 1947  | 1883 | 1848  | 1829 | 554  |
| 25° | 1786 | 1726  | 1602 | 1526  | 1498 | 821  |
| 35° | 1539 | 1443  | 1279 | 1161  | 1119 | 963  |
| 45° | 1258 | 1132  | 936  | 803   | 758  | 972  |
| 55° | 957  | 810   | 608  | 496   | 461  | 855  |
| 65° | 646  | 494   | 326  | 262   | 256  | 640  |
| 75° | 344  | 213   | 150  | 137   | 135  | 364  |
| 85° | 80   | 41    | 36   | 36    | 36   | 96   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 2068.6 | 2068.6 | 2068.6 | 2068.6 | 2068.6 |
| 2.5°  | 2077.9 | 2068.6 | 2047.9 | 2066.8 | 2063.0 |
| 5°    | 2068.6 | 2059.3 | 2034.8 | 2051.6 | 2046.1 |
| 7.5°  | 2051.6 | 2040.5 | 2014.3 | 2021.7 | 2012.3 |
| 10°   | 2029.2 | 2016.1 | 1978.8 | 1973.1 | 1961.9 |
| 12.5° | 2001.2 | 1984.4 | 1933.7 | 1922.6 | 1901.9 |
| 15°   | 1967.5 | 1946.8 | 1883.3 | 1847.7 | 1829.0 |
| 17.5° | 1928.1 | 1898.2 | 1819.5 | 1778.4 | 1748.3 |
| 20°   | 1883.3 | 1845.7 | 1752.2 | 1705.5 | 1664.2 |
| 22.5° | 1834.6 | 1791.5 | 1682.9 | 1619.3 | 1591.3 |
| 25°   | 1785.9 | 1725.9 | 1602.4 | 1525.7 | 1497.5 |
| 27.5° | 1727.9 | 1664.2 | 1527.5 | 1439.5 | 1396.5 |
| 30°   | 1666.2 | 1594.9 | 1445.1 | 1349.7 | 1299.1 |
| 32.5° | 1606.2 | 1520.0 | 1366.7 | 1254.3 | 1207.4 |
| 35°   | 1538.8 | 1443.3 | 1278.7 | 1160.7 | 1119.4 |
| 37.5° | 1473.3 | 1370.3 | 1196.3 | 1067.0 | 1020.3 |
| 40°   | 1404.0 | 1291.8 | 1110.0 | 977.2  | 928.5  |
| 42.5° | 1332.9 | 1213.1 | 1024.0 | 885.4  | 838.7  |
| 45°   | 1258.1 | 1132.5 | 936.0  | 803.0  | 758.1  |
| 47.5° | 1186.9 | 1054.1 | 851.9  | 718.8  | 677.7  |
| 50°   | 1108.3 | 975.4  | 769.5  | 640.1  | 601.0  |
| 52.5° | 1031.4 | 891.0  | 690.8  | 567.3  | 531.7  |
| 55°   | 956.6  | 810.5  | 608.3  | 496.1  | 460.6  |
| 57.5° | 879.9  | 730.1  | 535.4  | 430.6  | 400.6  |
| 60°   | 801.2  | 651.5  | 458.6  | 363.3  | 333.2  |
| 62.5° | 724.5  | 574.8  | 393.1  | 303.3  | 288.4  |
| 65°   | 645.8  | 494.2  | 325.7  | 262.2  | 256.5  |
| 67.5° | 571.0  | 419.3  | 262.2  | 230.2  | 224.6  |
| 70°   | 492.4  | 346.3  | 217.1  | 198.4  | 190.9  |
| 72.5° | 417.5  | 278.9  | 181.6  | 166.7  | 162.9  |
| 75°   | 344.4  | 213.3  | 149.7  | 136.6  | 134.8  |
| 77.5° | 271.5  | 151.6  | 118.0  | 110.4  | 106.6  |
| 80°   | 204.0  | 108.6  | 89.8   | 82.4   | 82.4   |
| 82.5° | 142.2  | 73.1   | 61.8   | 58.0   | 58.0   |
| 85°   | 80.5   | 41.1   | 35.5   | 35.5   | 35.5   |
| 87.5° | 30.0   | 14.9   | 14.9   | 13.1   | 13.1   |
| 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 | 14.23            | 15.75 | 14.60 | 16.07 | 16.38 | 10.19          | 11.72 | 10.56 | 12.03 | 12.34 |
|                 | 3H   | 16.00            | 17.36 | 16.38 | 17.69 | 18.05 | 11.46          | 12.82 | 11.84 | 13.15 | 13.51 |
|                 | 4H   | 16.66            | 17.95 | 17.06 | 18.29 | 18.67 | 11.96          | 13.24 | 12.36 | 13.59 | 13.97 |
|                 | 6H   | 17.15            | 18.34 | 17.57 | 18.70 | 19.09 | 12.34          | 13.52 | 12.75 | 13.89 | 14.28 |
|                 | 8H   | 17.32            | 18.45 | 17.75 | 18.83 | 19.24 | 12.47          | 13.59 | 12.89 | 13.98 | 14.38 |
|                 | 12H  | 17.42            | 18.50 | 17.85 | 18.88 | 19.31 | 12.55          | 13.62 | 12.98 | 14.01 | 14.44 |
| 4H              | 2H   | 14.34            | 15.62 | 14.74 | 15.97 | 16.34 | 10.89          | 12.17 | 11.29 | 12.52 | 12.90 |
|                 | 3H   | 16.27            | 17.33 | 16.68 | 17.73 | 18.13 | 12.33          | 13.39 | 12.74 | 13.79 | 14.20 |
|                 | 4H   | 17.02            | 17.98 | 17.45 | 18.39 | 18.83 | 12.93          | 13.89 | 13.36 | 14.30 | 14.74 |
|                 | 6H   | 17.61            | 18.44 | 18.07 | 18.89 | 19.35 | 13.42          | 14.25 | 13.88 | 14.69 | 15.15 |
|                 | 8H   | 17.83            | 18.60 | 18.29 | 19.05 | 19.51 | 13.58          | 14.36 | 14.04 | 14.80 | 15.27 |
|                 | 12H  | 17.98            | 18.67 | 18.46 | 19.15 | 19.62 | 13.70          | 14.39 | 14.18 | 14.87 | 15.34 |
| 8H              | 4H   | 17.04            | 17.82 | 17.51 | 18.27 | 18.73 | 13.29          | 14.06 | 13.75 | 14.51 | 14.97 |
|                 | 6H   | 17.68            | 18.32 | 18.18 | 18.82 | 19.29 | 13.87          | 14.51 | 14.37 | 15.01 | 15.48 |
|                 | 8H   | 17.93            | 18.51 | 18.45 | 19.02 | 19.51 | 14.09          | 14.67 | 14.61 | 15.18 | 15.67 |
|                 | 12H  | 18.14            | 18.65 | 18.65 | 19.14 | 19.70 | 14.27          | 14.78 | 14.78 | 15.27 | 15.84 |
| 12H             | 4H   | 17.03            | 17.72 | 17.51 | 18.20 | 18.67 | 13.33          | 14.02 | 13.81 | 14.50 | 14.97 |
|                 | 6H   | 17.66            | 18.24 | 18.18 | 18.75 | 19.24 | 13.93          | 14.51 | 14.45 | 15.02 | 15.51 |
|                 | 8H   | 17.95            | 18.46 | 18.46 | 18.95 | 19.51 | 14.21          | 14.72 | 14.72 | 15.21 | 15.77 |