

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: P930079

Luminaire Tested: DFN2DS-HX2F0-040DS840-FLL

Issue Date: 11/20/2024

**Test Information**

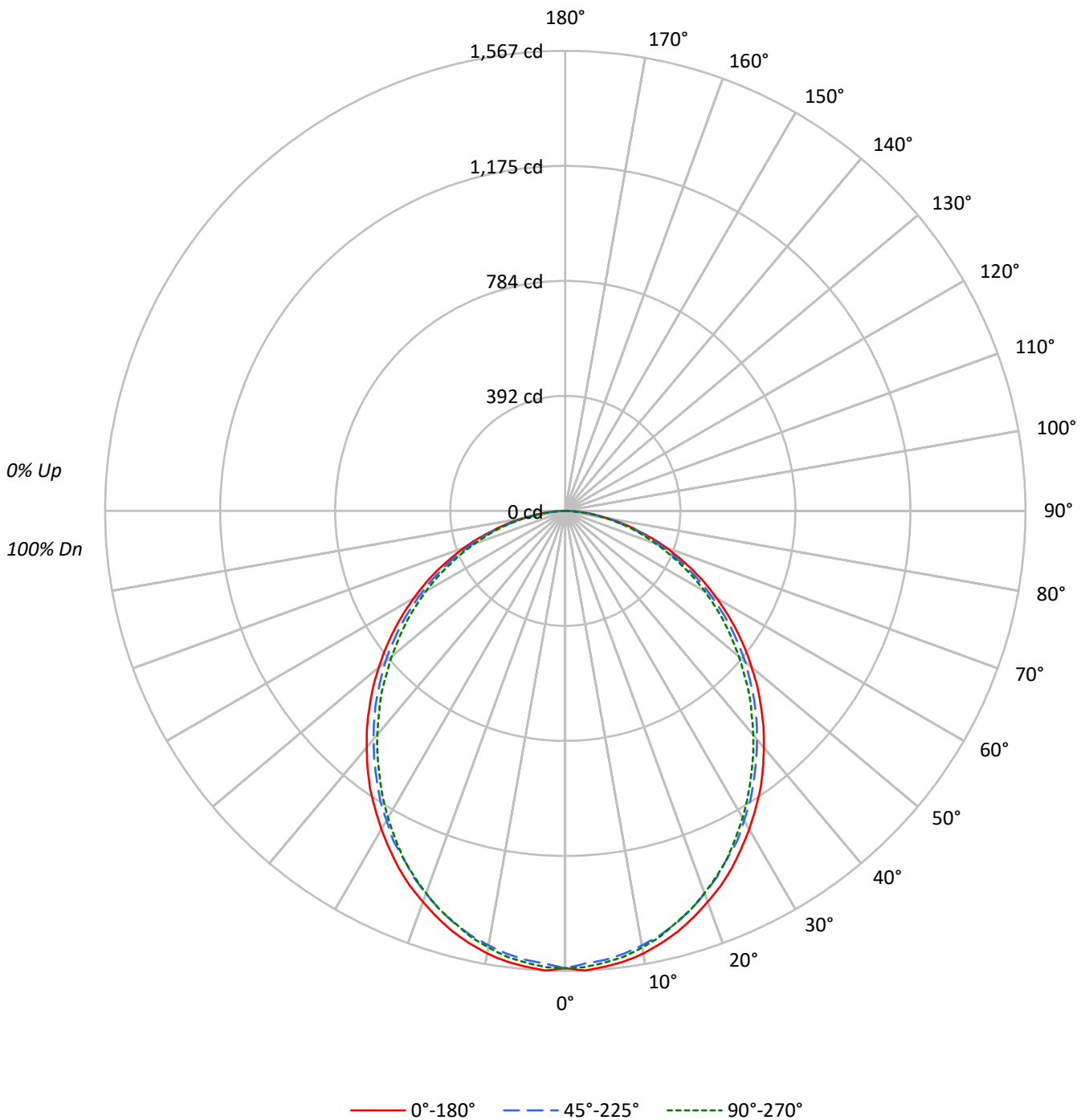
Test Method: LM-79-2019  
Report Number: P930079  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P333812)  
Test Lab: INNOVATION CENTER  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DS-HX2F0-040DS840-FLL  
Description: 2 foot, Hexagon Define Geo, with Direct Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3963.9 lumens  
Efficiency: N/A  
Efficacy: 103.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular (W 2.3' x L: 1.99' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 38.4  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 102 | 102 | 102 | 100 |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 92  | 94  | 91  | 89  | 90  | 88  | 86  | 86  | 86  | 86  | 84  |
| 2   | 99  | 91  | 85  | 79  | 97  | 89  | 83  | 78  | 86  | 81  | 76  | 83  | 78  | 74  | 80  | 76  | 73  | 73  | 73  | 73  | 71  |
| 3   | 91  | 80  | 72  | 66  | 88  | 79  | 71  | 65  | 76  | 69  | 64  | 73  | 68  | 63  | 71  | 66  | 62  | 62  | 62  | 62  | 60  |
| 4   | 83  | 71  | 63  | 56  | 81  | 70  | 62  | 56  | 68  | 61  | 55  | 65  | 59  | 54  | 63  | 58  | 54  | 54  | 54  | 54  | 51  |
| 5   | 77  | 64  | 55  | 49  | 75  | 63  | 55  | 48  | 61  | 53  | 48  | 59  | 52  | 47  | 57  | 51  | 47  | 47  | 47  | 47  | 45  |
| 6   | 71  | 58  | 49  | 43  | 69  | 57  | 48  | 42  | 55  | 48  | 42  | 53  | 47  | 42  | 52  | 46  | 41  | 41  | 41  | 41  | 39  |
| 7   | 66  | 52  | 44  | 38  | 64  | 52  | 43  | 38  | 50  | 43  | 37  | 49  | 42  | 37  | 47  | 41  | 37  | 37  | 37  | 37  | 35  |
| 8   | 61  | 48  | 40  | 34  | 60  | 47  | 39  | 34  | 46  | 39  | 33  | 45  | 38  | 33  | 44  | 38  | 33  | 33  | 33  | 33  | 31  |
| 9   | 57  | 44  | 36  | 30  | 56  | 43  | 36  | 30  | 42  | 35  | 30  | 41  | 35  | 30  | 40  | 34  | 30  | 30  | 30  | 30  | 28  |
| 10  | 54  | 41  | 33  | 28  | 53  | 40  | 33  | 28  | 39  | 32  | 27  | 38  | 32  | 27  | 37  | 32  | 27  | 27  | 27  | 27  | 26  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3671 | 3671 | 3671 |
| 5°  | 3685 | 3632 | 3653 |
| 10° | 3663 | 3595 | 3613 |
| 15° | 3618 | 3548 | 3545 |
| 20° | 3553 | 3478 | 3475 |
| 25° | 3489 | 3392 | 3392 |
| 30° | 3408 | 3314 | 3285 |
| 35° | 3331 | 3219 | 3171 |
| 40° | 3235 | 3124 | 3064 |
| 45° | 3140 | 3030 | 2955 |
| 50° | 3037 | 2932 | 2828 |
| 55° | 2930 | 2819 | 2714 |
| 60° | 2809 | 2683 | 2584 |
| 65° | 2682 | 2548 | 2431 |
| 70° | 2519 | 2384 | 2271 |
| 75° | 2291 | 2195 | 2141 |
| 80° | 2033 | 1970 | 1870 |
| 85° | 1660 | 1581 | 1419 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3140 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.6  | 3.7       |
| 10°-20°   | 412.6  | 10.4      |
| 20°-30°   | 606.3  | 15.3      |
| 30°-40°   | 704.2  | 17.8      |
| 40°-50°   | 703.3  | 17.7      |
| 50°-60°   | 613.3  | 15.5      |
| 60°-70°   | 453.4  | 11.4      |
| 70°-80°   | 256.5  | 6.5       |
| 80°-90°   | 67.7   | 1.7       |
| 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°    | 1165.5 | 29.4      |
| 0°-40°    | 1869.8 | 47.2      |
| 0°-60°    | 3186.4 | 80.4      |
| 0°-90°    | 3963.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3963.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1558 | 1558  | 1558 | 1558  | 1558 |      |
| 5°  | 1558 | 1552  | 1536 | 1547  | 1545 | 148  |
| 15° | 1483 | 1474  | 1455 | 1461  | 1453 | 418  |
| 25° | 1342 | 1330  | 1305 | 1308  | 1305 | 618  |
| 35° | 1158 | 1143  | 1119 | 1110  | 1103 | 723  |
| 45° | 942  | 932   | 909  | 893   | 887  | 727  |
| 55° | 713  | 704   | 686  | 668   | 661  | 638  |
| 65° | 481  | 472   | 457  | 443   | 436  | 476  |
| 75° | 252  | 249   | 241  | 232   | 235  | 269  |
| 85° | 61   | 60    | 58   | 54    | 52   | 72   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1558.0 | 1558.0 | 1558.0 | 1558.0 | 1558.0 |
| 2.5°  | 1567.1 | 1559.6 | 1543.0 | 1558.0 | 1555.2 |
| 5°    | 1558.0 | 1552.1 | 1535.5 | 1547.4 | 1544.6 |
| 7.5°  | 1547.4 | 1538.5 | 1522.0 | 1534.1 | 1531.1 |
| 10°   | 1531.1 | 1520.6 | 1502.7 | 1514.6 | 1510.1 |
| 12.5° | 1508.5 | 1499.6 | 1481.7 | 1489.2 | 1486.1 |
| 15°   | 1483.1 | 1474.2 | 1454.7 | 1460.7 | 1453.3 |
| 17.5° | 1451.7 | 1442.7 | 1423.2 | 1430.6 | 1423.2 |
| 20°   | 1417.1 | 1408.2 | 1387.3 | 1391.7 | 1385.9 |
| 22.5° | 1382.8 | 1369.3 | 1349.7 | 1349.7 | 1346.7 |
| 25°   | 1342.2 | 1330.3 | 1304.9 | 1307.8 | 1304.9 |
| 27.5° | 1297.3 | 1286.8 | 1267.5 | 1263.0 | 1255.6 |
| 30°   | 1252.5 | 1240.4 | 1218.0 | 1213.5 | 1207.5 |
| 32.5° | 1204.5 | 1195.6 | 1171.6 | 1162.6 | 1156.5 |
| 35°   | 1158.1 | 1143.1 | 1119.1 | 1110.1 | 1102.6 |
| 37.5° | 1105.6 | 1092.1 | 1068.1 | 1057.7 | 1050.1 |
| 40°   | 1051.8 | 1039.6 | 1015.6 | 1002.3 | 996.3  |
| 42.5° | 999.3  | 987.2  | 963.4  | 948.2  | 939.3  |
| 45°   | 942.3  | 931.9  | 909.3  | 893.0  | 886.9  |
| 47.5° | 886.9  | 876.4  | 852.5  | 835.9  | 827.0  |
| 50°   | 828.4  | 820.9  | 800.0  | 779.0  | 771.5  |
| 52.5° | 771.5  | 761.1  | 741.6  | 725.1  | 714.6  |
| 55°   | 713.2  | 704.1  | 686.2  | 668.2  | 660.8  |
| 57.5° | 654.7  | 647.2  | 627.6  | 609.7  | 603.7  |
| 60°   | 596.2  | 590.3  | 569.4  | 552.9  | 548.3  |
| 62.5° | 539.3  | 528.8  | 513.9  | 498.9  | 492.9  |
| 65°   | 481.0  | 471.9  | 457.0  | 443.4  | 436.0  |
| 67.5° | 421.0  | 413.4  | 400.1  | 389.6  | 383.6  |
| 70°   | 365.6  | 359.6  | 346.0  | 335.5  | 329.6  |
| 72.5° | 308.7  | 302.6  | 295.2  | 284.7  | 280.2  |
| 75°   | 251.7  | 248.7  | 241.1  | 232.2  | 235.2  |
| 77.5° | 200.7  | 194.7  | 191.7  | 187.2  | 182.8  |
| 80°   | 149.8  | 148.2  | 145.2  | 140.8  | 137.8  |
| 82.5° | 101.9  | 101.9  | 100.5  | 94.4   | 94.4   |
| 85°   | 61.4   | 60.0   | 58.5   | 53.9   | 52.5   |
| 87.5° | 27.0   | 24.0   | 21.0   | 16.5   | 14.9   |
| 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 | 15.80            | 17.41 | 16.17 | 17.73 | 18.04 | 15.36          | 16.97 | 15.72 | 17.28 | 17.60 |
|                 | 3H   | 17.55            | 19.01 | 17.93 | 19.33 | 19.69 | 17.06          | 18.51 | 17.44 | 18.84 | 19.20 |
|                 | 4H   | 18.20            | 19.57 | 18.60 | 19.91 | 20.29 | 17.70          | 19.07 | 18.10 | 19.42 | 19.80 |
|                 | 6H   | 18.67            | 19.93 | 19.08 | 20.30 | 20.69 | 18.16          | 19.43 | 18.58 | 19.80 | 20.19 |
|                 | 8H   | 18.81            | 20.02 | 19.23 | 20.41 | 20.81 | 18.31          | 19.52 | 18.73 | 19.91 | 20.31 |
|                 | 12H  | 18.90            | 20.06 | 19.33 | 20.44 | 20.87 | 18.39          | 19.55 | 18.82 | 19.93 | 20.36 |
| 4H              | 2H   | 16.36            | 17.73 | 16.76 | 18.08 | 18.45 | 16.01          | 17.38 | 16.41 | 17.73 | 18.10 |
|                 | 3H   | 18.34            | 19.48 | 18.75 | 19.88 | 20.28 | 17.93          | 19.08 | 18.34 | 19.47 | 19.87 |
|                 | 4H   | 19.11            | 20.15 | 19.54 | 20.56 | 21.00 | 18.69          | 19.72 | 19.12 | 20.14 | 20.57 |
|                 | 6H   | 19.71            | 20.61 | 20.16 | 21.05 | 21.51 | 19.28          | 20.18 | 19.73 | 20.62 | 21.08 |
|                 | 8H   | 19.90            | 20.74 | 20.36 | 21.19 | 21.65 | 19.46          | 20.31 | 19.92 | 20.75 | 21.21 |
|                 | 12H  | 20.03            | 20.79 | 20.51 | 21.27 | 21.74 | 19.58          | 20.34 | 20.06 | 20.81 | 21.28 |
| 8H              | 4H   | 19.39            | 20.23 | 19.85 | 20.68 | 21.14 | 19.01          | 19.86 | 19.47 | 20.30 | 20.77 |
|                 | 6H   | 20.10            | 20.80 | 20.59 | 21.29 | 21.77 | 19.72          | 20.42 | 20.21 | 20.91 | 21.39 |
|                 | 8H   | 20.36            | 20.99 | 20.87 | 21.50 | 21.98 | 19.97          | 20.60 | 20.48 | 21.11 | 21.59 |
|                 | 12H  | 20.56            | 21.12 | 21.07 | 21.61 | 22.17 | 20.15          | 20.70 | 20.65 | 21.19 | 21.76 |
| 12H             | 4H   | 19.41            | 20.17 | 19.89 | 20.65 | 21.12 | 19.05          | 19.81 | 19.53 | 20.28 | 20.75 |
|                 | 6H   | 20.15            | 20.78 | 20.65 | 21.28 | 21.77 | 19.78          | 20.41 | 20.29 | 20.92 | 21.40 |
|                 | 8H   | 20.46            | 21.02 | 20.97 | 21.51 | 22.07 | 20.08          | 20.64 | 20.59 | 21.13 | 21.69 |