

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: P911319

Luminaire Tested: DFN2DIP-PN3F0-090D070US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

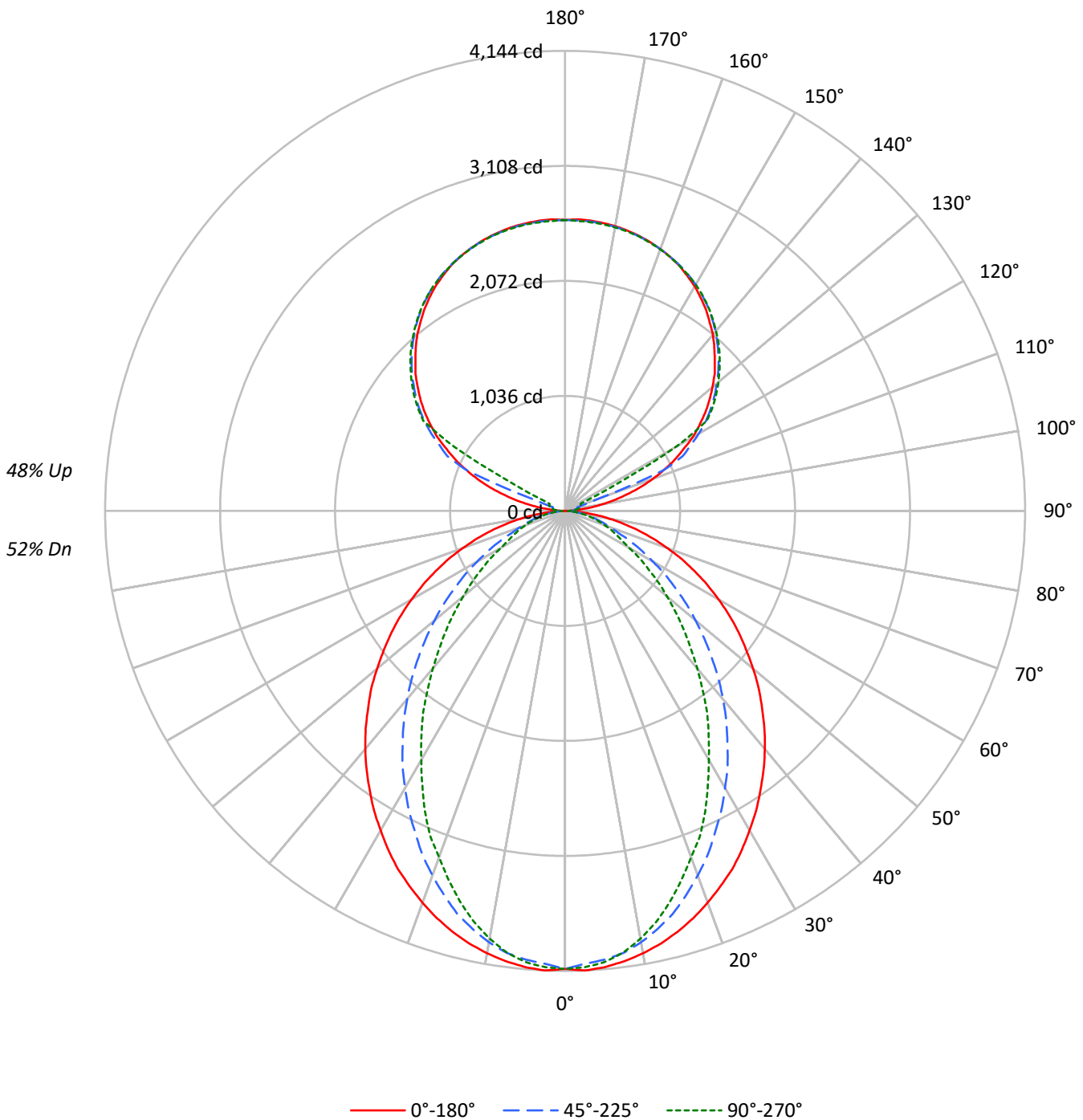
Test Method: LM-79-2019  
Report Number: P911319  
REPORT IS A COMBINATION OF REPORTS P901100 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-090D070US850-RLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16169.3 lumens  
Efficiency: N/A  
Efficacy: 109.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 147.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58	58	58	58	52
1	99	95	91	88	91	88	85	82	75	73	71	63	62	60	52	51	50	52	51	50	45
2	90	83	77	72	84	77	72	68	66	63	59	56	53	51	47	45	43	47	45	43	39
3	83	74	67	61	76	69	62	57	59	54	50	50	47	44	42	39	37	42	39	37	33
4	76	66	58	52	70	61	54	49	53	48	43	45	41	38	38	35	33	38	35	33	29
5	70	59	51	45	65	55	48	43	47	42	38	41	36	33	34	31	29	34	31	29	26
6	65	53	45	39	60	49	42	37	43	37	33	37	33	29	31	28	26	31	28	26	23
7	60	48	40	35	55	45	38	33	39	34	30	34	29	26	29	25	23	29	25	23	20
8	56	44	36	31	52	41	34	29	36	30	26	31	27	24	26	23	21	26	23	21	18
9	52	40	33	28	48	38	31	26	33	28	24	29	24	21	25	21	19	25	21	19	17
10	49	37	30	25	45	35	28	24	30	25	22	27	22	19	23	20	17	23	20	17	15

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

	0°	45°	90°
0°	4822	4822	4822
5°	4827	4742	4774
10°	4776	4646	4617
15°	4708	4489	4375
20°	4618	4274	4078
25°	4526	4034	3792
30°	4403	3788	3430
35°	4283	3524	3112
40°	4160	3251	2748
45°	4018	2949	2418
50°	3871	2644	2095
55°	3717	2318	1786
60°	3538	1979	1468
65°	3333	1633	1319
70°	3084	1312	1190
75°	2770	1149	1078
80°	2316	953	929
85°	1573	620	686

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4018 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	386.6	2.4
10°-20°	1061.3	6.6
20°-30°	1490.1	9.2
30°-40°	1624.3	10.0
40°-50°	1492.9	9.2
50°-60°	1172.4	7.3
60°-70°	763.1	4.7
70°-80°	392.8	2.4
80°-90°	104.9	0.6
90°-100°	86.4	0.5
100°-110°	322.1	2.0
110°-120°	854.1	5.3
120°-130°	1416.6	8.8
130°-140°	1504.8	9.3
140°-150°	1398.5	8.6
150°-160°	1124.4	7.0
160°-170°	724.5	4.5
170°-180°	249.4	1.5
0°-30°	2938.0	18.2
0°-40°	4562.3	28.2
0°-60°	7227.6	44.7
0°-90°	8488.5	52.5
90°-120°	1262.6	7.8
90°-150°	5582.5	34.5
90°-180°	7681.0	47.5
0°-180°	16169.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4125	4125	4125	4125	4125	
5°	4125	4106	4058	4091	4080	391
15°	3924	3882	3756	3685	3648	1106
25°	3562	3442	3196	3043	2986	1638
35°	3069	2878	2550	2315	2232	1921
45°	2509	2258	1867	1601	1512	1937
55°	1908	1616	1213	989	918	1705
65°	1288	986	650	523	511	1277
75°	687	425	299	272	269	726
85°	160	82	71	71	71	184
90°	2	23	38	48	51	15
95°	123	61	74	84	82	146
105°	576	633	116	136	144	616
115°	1090	1122	1170	292	156	1073
125°	1541	1566	1602	1615	1621	1375
135°	1907	1938	1954	1974	1970	1473
145°	2212	2210	2243	2256	2246	1384
155°	2436	2419	2442	2453	2438	1123
165°	2567	2556	2561	2574	2561	725
175°	2626	2612	2616	2629	2610	250
180°	2620	2620	2620	2620	2620	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4125.1	4125.1	4125.1	4125.1	4125.1
2.5°	4143.8	4125.1	4083.9	4121.6	4114.1
5°	4125.1	4106.5	4057.8	4091.4	4080.3
7.5°	4091.4	4069.3	4017.0	4031.7	4013.0
10°	4046.7	4020.6	3946.2	3934.6	3912.4
12.5°	3990.8	3957.2	3856.2	3834.0	3792.8
15°	3923.5	3882.4	3755.6	3684.7	3647.5
17.5°	3845.1	3785.3	3628.4	3546.5	3486.7
20°	3755.6	3680.8	3494.1	3401.1	3318.7
22.5°	3658.6	3572.6	3355.9	3229.2	3173.4
25°	3561.6	3441.9	3195.6	3042.7	2986.4
27.5°	3445.9	3318.7	3046.2	2870.8	2784.8
30°	3322.7	3180.5	2881.8	2691.8	2590.7
32.5°	3203.0	3031.1	2725.4	2501.2	2407.7
35°	3068.8	2878.3	2549.9	2314.7	2232.3
37.5°	2938.1	2732.6	2385.6	2127.7	2034.7
40°	2799.9	2576.1	2213.7	1948.7	1851.7
42.5°	2658.1	2419.3	2042.1	1765.7	1672.6
45°	2508.8	2258.5	1866.7	1601.3	1511.8
47.5°	2366.9	2102.0	1698.8	1433.4	1351.4
50°	2210.1	1945.1	1534.4	1276.6	1198.5
52.5°	2056.9	1776.8	1377.6	1131.2	1060.3
55°	1907.5	1616.4	1213.1	989.4	918.5
57.5°	1754.7	1456.0	1067.9	858.7	798.9
60°	1597.7	1299.1	914.6	724.4	664.6
62.5°	1444.9	1146.3	783.8	604.8	575.1
65°	1288.0	985.5	649.5	522.8	511.4
67.5°	1138.7	836.1	522.8	459.0	447.9
70°	981.9	690.8	433.0	395.7	380.6
72.5°	832.5	556.1	362.0	332.3	324.8
75°	686.8	425.4	298.7	272.5	268.9
77.5°	541.4	302.2	235.2	220.2	212.7
80°	406.8	216.7	179.0	164.4	164.4
82.5°	283.6	145.7	123.2	115.7	115.7
85°	160.4	82.0	70.9	70.9	70.9
87.5°	59.8	29.7	29.7	26.2	26.2
90°	1.8	22.7	37.8	47.5	51.1
92.5°	47.5	39.8	45.5	49.4	51.1
95°	123.1	60.6	73.9	83.5	81.5
97.5°	221.7	66.4	96.6	102.5	104.2
100°	335.7	75.9	108.0	123.1	127.0
102.5°	460.6	457.0	111.9	132.6	138.4
105°	576.3	633.2	115.7	136.4	144.1
107.5°	710.9	758.2	119.6	140.3	147.9
110°	840.0	879.5	331.8	142.3	149.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	961.3	995.2	963.1	145.8	151.7
115°	1090.0	1122.2	1169.7	292.0	155.6
117.5°	1201.9	1239.8	1272.1	1000.9	504.3
120°	1327.0	1355.4	1389.7	1412.4	1156.5
122.5°	1433.0	1463.4	1501.6	1512.8	1514.8
125°	1541.2	1565.9	1602.0	1615.3	1620.8
127.5°	1639.8	1666.3	1694.9	1713.8	1715.6
130°	1732.7	1763.1	1783.8	1804.8	1803.0
132.5°	1827.5	1852.3	1873.0	1890.1	1888.3
135°	1907.1	1937.5	1954.5	1973.6	1969.8
137.5°	1990.4	2013.3	2032.4	2051.3	2045.7
140°	2071.9	2087.2	2108.0	2125.1	2115.6
142.5°	2140.4	2153.7	2178.2	2193.3	2183.8
145°	2212.5	2210.5	2242.6	2255.9	2246.5
147.5°	2274.8	2269.2	2301.4	2310.8	2303.4
150°	2335.6	2322.4	2352.7	2363.9	2354.5
152.5°	2386.7	2371.6	2400.0	2411.4	2398.2
155°	2436.0	2419.1	2441.8	2453.1	2438.0
157.5°	2475.8	2460.8	2477.8	2491.1	2475.8
160°	2510.1	2498.6	2510.1	2521.3	2508.0
162.5°	2540.3	2529.0	2538.4	2551.7	2534.6
165°	2566.8	2555.6	2561.1	2574.4	2561.1
167.5°	2587.7	2576.2	2582.1	2595.4	2578.3
170°	2604.8	2593.4	2597.2	2610.5	2593.4
172.5°	2616.1	2604.8	2608.7	2621.9	2604.8
175°	2625.6	2612.2	2616.1	2629.3	2610.5
177.5°	2629.3	2616.1	2618.1	2631.4	2614.2
180°	2619.9	2619.9	2619.9	2619.9	2619.9



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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	12.80	13.66	13.75	14.61	15.85	8.77	9.62	9.71	10.58	11.81
	3H	14.48	15.24	15.43	16.20	17.46	9.96	10.72	10.91	11.68	12.94
	4H	15.08	15.80	16.05	16.77	18.04	10.40	11.12	11.37	12.09	13.36
	6H	15.50	16.16	16.48	17.14	18.42	10.72	11.38	11.70	12.35	13.64
	8H	15.63	16.26	16.61	17.24	18.52	10.81	11.44	11.79	12.43	13.71
	12H	15.69	16.28	16.68	17.27	18.57	10.85	11.45	11.84	12.43	13.73
4H	2H	12.82	13.54	13.80	14.51	15.78	9.37	10.08	10.34	11.05	12.32
	3H	14.65	15.25	15.63	16.24	17.53	10.71	11.31	11.69	12.31	13.59
	4H	15.34	15.88	16.33	16.87	18.18	11.25	11.80	12.25	12.79	14.10
	6H	15.85	16.32	16.85	17.33	18.64	11.67	12.14	12.67	13.15	14.46
	8H	16.02	16.46	17.02	17.46	18.78	11.79	12.23	12.80	13.24	14.56
	12H	16.11	16.51	17.13	17.53	18.85	11.86	12.25	12.88	13.27	14.60
8H	4H	15.30	15.74	16.31	16.75	18.07	11.53	11.97	12.54	12.98	14.30
	6H	15.86	16.23	16.89	17.28	18.59	12.04	12.40	13.07	13.45	14.77
	8H	16.08	16.40	17.11	17.43	18.77	12.23	12.55	13.27	13.58	14.92
	12H	16.21	16.49	17.25	17.52	18.90	12.35	12.63	13.39	13.65	15.04
12H	4H	15.26	15.65	16.28	16.67	18.00	11.54	11.93	12.56	12.96	14.28
	6H	15.84	16.16	16.88	17.19	18.53	12.09	12.41	13.13	13.45	14.78
	8H	16.06	16.34	17.10	17.37	18.75	12.30	12.58	13.34	13.61	14.99