

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: P911596

Luminaire Tested: DFN2DIP-PN4F0-110D080US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

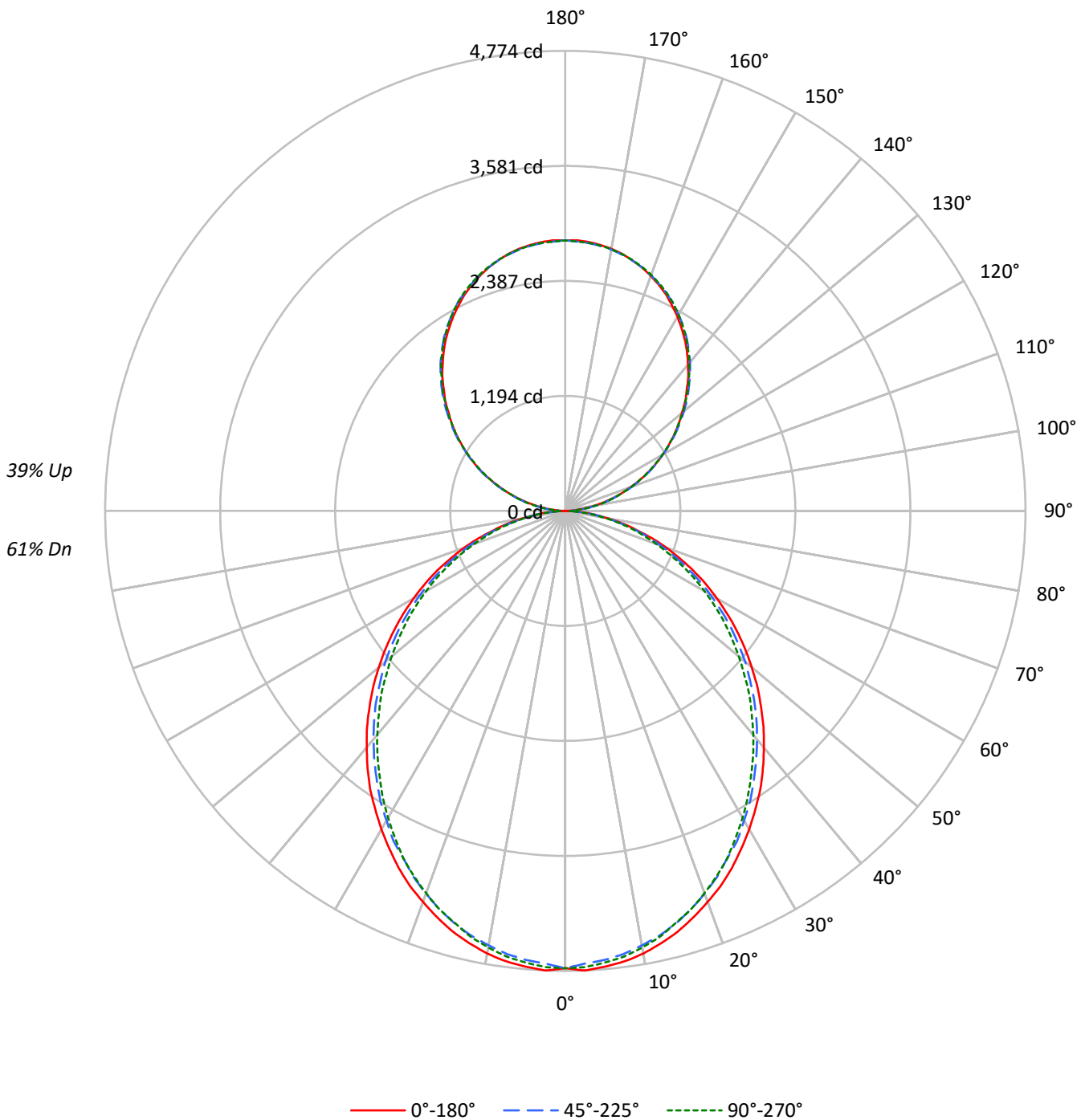
Test Method: LM-79-2019  
Report Number: P911596  
REPORT IS A COMBINATION OF REPORTS P899695 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-110D080US850-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19928.7 lumens  
Efficiency: N/A  
Efficacy: 115.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 172.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P911596  
CATALOG NUMBER: DFN2DIP-PN4F0-110D080US850-FLLFLL

### Luminous Intensity Polar Plot





TEST NUMBER: P911596

CATALOG NUMBER: DFN2DIP-PN4F0-110D080US850-FLLFLL

**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
RCR																				
0	110	110	110	110	103	103	103	103	89	89	89	77	77	77	66	66	66	66	66	61
1	100	96	92	88	94	90	86	83	78	76	73	68	66	64	58	57	56	56	56	51
2	91	84	77	72	85	78	73	68	69	64	61	60	56	54	51	49	47	47	47	43
3	83	74	66	60	78	69	62	57	61	55	51	53	49	45	45	42	40	40	40	36
4	76	65	57	51	71	61	54	48	54	48	44	47	43	39	41	37	34	34	34	31
5	70	58	50	44	65	55	47	42	48	42	38	42	38	34	37	33	30	30	30	27
6	65	52	44	38	60	49	42	36	44	38	33	38	33	30	33	29	26	26	26	24
7	60	47	39	33	56	45	37	32	40	34	29	35	30	26	30	27	24	24	24	21
8	55	43	35	30	52	41	33	28	36	30	26	32	27	24	28	24	21	21	21	19
9	52	39	32	26	48	37	30	25	33	27	23	29	25	21	26	22	19	19	19	17
10	48	36	29	24	45	34	27	23	31	25	21	27	23	19	24	20	17	17	17	15

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

	0°	45°	90°
0°	3465	3465	3465
5°	3470	3417	3440
10°	3442	3372	3394
15°	3392	3316	3322
20°	3323	3240	3248
25°	3255	3148	3163
30°	3170	3063	3054
35°	3089	2962	2939
40°	2990	2860	2829
45°	2891	2758	2717
50°	2782	2651	2587
55°	2669	2528	2468
60°	2540	2380	2331
65°	2400	2229	2170
70°	2222	2043	1997
75°	1975	1821	1838
80°	1678	1539	1533
85°	1214	1050	1025

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2891 cd/sqm



TEST NUMBER: P911596

CATALOG NUMBER: DFN2DIP-PN4F0-110D080US850-FLLFLL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	446.8	2.2
10°-20°	1257.0	6.3
20°-30°	1847.3	9.3
30°-40°	2145.5	10.8
40°-50°	2142.9	10.8
50°-60°	1868.5	9.4
60°-70°	1381.3	6.9
70°-80°	781.5	3.9
80°-90°	214.2	1.1
90°-100°	173.6	0.9
100°-110°	551.7	2.8
110°-120°	944.1	4.7
120°-130°	1241.6	6.2
130°-140°	1393.7	7.0
140°-150°	1366.6	6.9
150°-160°	1146.4	5.8
160°-170°	760.3	3.8
170°-180°	265.7	1.3
0°-30°	3551.1	17.8
0°-40°	5696.6	28.6
0°-60°	9708.0	48.7
0°-90°	12085.0	60.6
90°-120°	1669.4	8.4
90°-150°	5671.3	28.5
90°-180°	7844.0	39.4
0°-180°	19928.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4747	4747	4747	4747	4747	
5°	4747	4729	4678	4715	4706	451
15°	4519	4491	4432	4450	4428	1273
25°	4090	4053	3976	3984	3976	1882
35°	3528	3483	3410	3382	3359	2203
45°	2871	2839	2770	2721	2702	2216
55°	2173	2145	2091	2036	2013	1943
65°	1465	1438	1392	1351	1328	1449
75°	766	758	735	708	717	818
85°	187	182	178	164	160	209
90°	3	30	83	78	80	19
95°	124	147	151	151	147	137
105°	509	516	521	525	525	537
115°	947	961	957	954	947	937
125°	1378	1399	1392	1385	1382	1231
135°	1782	1809	1814	1811	1804	1378
145°	2164	2181	2194	2197	2188	1352
155°	2474	2481	2489	2500	2493	1139
165°	2692	2689	2689	2706	2694	759
175°	2801	2794	2789	2806	2792	266
180°	2806	2806	2806	2806	2806	



TEST NUMBER: P911596

CATALOG NUMBER: DFN2DIP-PN4F0-110D080US850-FLLFL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4746.7	4746.7	4746.7	4746.7	4746.7
2.5°	4774.2	4751.5	4701.2	4746.7	4738.0
5°	4746.7	4728.8	4678.4	4714.7	4706.0
7.5°	4714.7	4687.6	4637.3	4674.1	4664.9
10°	4664.9	4632.8	4578.2	4614.4	4600.9
12.5°	4596.1	4569.0	4514.3	4537.0	4527.8
15°	4518.6	4491.4	4431.9	4450.3	4427.6
17.5°	4422.7	4395.6	4336.1	4358.8	4336.1
20°	4317.7	4290.5	4226.6	4240.2	4222.3
22.5°	4213.1	4171.8	4112.3	4112.3	4103.1
25°	4089.5	4053.3	3975.8	3984.5	3975.8
27.5°	3952.5	3920.5	3861.4	3847.9	3825.2
30°	3816.0	3779.1	3710.8	3697.3	3678.9
32.5°	3669.7	3642.6	3569.4	3541.8	3523.4
35°	3528.3	3482.8	3409.6	3382.0	3359.3
37.5°	3368.5	3327.3	3254.2	3222.2	3199.5
40°	3204.3	3167.5	3094.4	3053.7	3035.3
42.5°	3044.5	3007.7	2935.1	2889.1	2862.0
45°	2871.2	2839.2	2770.4	2720.6	2702.2
47.5°	2702.2	2670.3	2597.1	2546.7	2519.5
50°	2524.0	2501.2	2437.2	2373.4	2350.6
52.5°	2350.6	2318.6	2259.6	2209.1	2177.2
55°	2172.9	2145.2	2090.6	2035.8	2013.1
57.5°	1994.6	1971.9	1912.4	1857.6	1839.2
60°	1816.4	1798.6	1734.6	1684.2	1670.7
62.5°	1643.1	1611.2	1565.6	1520.1	1501.7
65°	1465.3	1437.7	1392.2	1351.1	1328.4
67.5°	1282.8	1259.6	1218.9	1187.0	1168.6
70°	1113.8	1095.4	1054.2	1022.3	1004.3
72.5°	940.4	922.0	899.3	867.3	853.7
75°	766.5	757.9	734.6	707.5	716.7
77.5°	611.6	593.2	584.0	570.5	556.9
80°	456.7	451.8	442.6	429.1	419.9
82.5°	310.4	310.4	306.1	287.7	287.7
85°	187.0	182.5	178.2	164.1	159.8
87.5°	82.3	73.1	63.9	50.3	45.5
90°	2.6	30.5	83.0	77.9	80.4
92.5°	52.5	71.1	73.6	76.1	76.1
95°	123.5	147.2	151.4	151.4	147.2
97.5°	205.6	227.6	236.9	236.9	236.9
100°	300.3	319.7	326.5	326.5	323.9
102.5°	400.1	414.5	423.7	426.3	423.7
105°	509.3	516.0	521.1	525.3	525.3
107.5°	617.5	627.7	627.7	629.4	617.5
110°	722.4	735.9	735.9	735.9	729.2



TEST NUMBER: P911596

CATALOG NUMBER: DFN2DIP-PN4F0-110D080US850-FLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	835.7	850.2	847.6	840.8	835.7
115°	947.4	960.9	956.7	954.2	947.4
117.5°	1058.2	1076.8	1065.0	1058.2	1051.4
120°	1169.9	1188.5	1169.9	1169.9	1162.2
122.5°	1271.4	1295.1	1283.2	1276.5	1271.4
125°	1377.9	1399.1	1392.3	1384.7	1382.3
127.5°	1482.1	1508.2	1498.9	1488.8	1482.1
130°	1579.3	1609.7	1605.5	1600.5	1591.2
132.5°	1688.5	1712.1	1713.8	1702.0	1695.2
135°	1782.3	1808.6	1813.7	1811.1	1804.3
137.5°	1887.2	1908.4	1912.6	1910.9	1900.7
140°	1979.5	2000.5	2012.4	2012.4	2003.1
142.5°	2074.2	2095.3	2102.1	2104.7	2095.3
145°	2163.9	2180.7	2194.3	2196.8	2187.5
147.5°	2244.2	2265.4	2275.4	2279.8	2270.5
150°	2327.1	2341.4	2350.7	2358.4	2350.7
152.5°	2400.7	2415.1	2426.9	2436.3	2426.9
155°	2474.3	2481.1	2488.7	2500.5	2492.9
157.5°	2537.7	2542.8	2547.0	2563.9	2552.1
160°	2594.4	2599.5	2602.0	2616.4	2606.3
162.5°	2646.9	2646.9	2649.4	2665.5	2653.6
165°	2691.7	2689.1	2689.1	2706.1	2694.2
167.5°	2732.2	2724.7	2724.7	2741.6	2729.7
170°	2762.7	2756.0	2753.4	2770.4	2756.0
172.5°	2783.9	2777.2	2774.6	2791.5	2777.2
175°	2800.8	2794.0	2788.9	2805.9	2791.5
177.5°	2810.1	2803.3	2798.2	2812.6	2798.2
180°	2805.9	2805.9	2805.9	2805.9	2805.9



TEST NUMBER: P911596  
 CATALOG NUMBER: DFN2DIP-PN4F0-110D080US850-FLLFLL

**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	12.52	13.49	13.38	14.37	15.48	12.08	13.05	12.94	13.93	15.04
	3H	14.19	15.06	15.07	15.95	17.09	13.71	14.58	14.58	15.47	16.60
	4H	14.79	15.61	15.68	16.51	17.65	14.30	15.12	15.19	16.02	17.17
	6H	15.20	15.95	16.10	16.86	18.02	14.70	15.46	15.60	16.36	17.52
	8H	15.30	16.02	16.21	16.95	18.11	14.81	15.53	15.72	16.45	17.61
	12H	15.36	16.04	16.27	16.96	18.14	14.86	15.54	15.77	16.46	17.64
4H	2H	13.00	13.82	13.89	14.71	15.86	12.65	13.47	13.54	14.36	15.51
	3H	14.88	15.56	15.78	16.49	17.65	14.47	15.16	15.38	16.09	17.25
	4H	15.60	16.22	16.51	17.15	18.33	15.18	15.80	16.09	16.73	17.92
	6H	16.12	16.66	17.05	17.61	18.80	15.70	16.24	16.63	17.18	18.37
	8H	16.27	16.78	17.21	17.72	18.92	15.85	16.35	16.78	17.29	18.49
	12H	16.35	16.81	17.31	17.77	18.98	15.91	16.37	16.87	17.33	18.54
8H	4H	15.80	16.31	16.73	17.25	18.45	15.43	15.93	16.36	16.88	18.08
	6H	16.44	16.86	17.40	17.84	19.04	16.06	16.48	17.02	17.47	18.67
	8H	16.66	17.03	17.63	18.01	19.23	16.28	16.65	17.25	17.62	18.84
	12H	16.80	17.13	17.77	18.10	19.36	16.40	16.73	17.37	17.69	18.96
12H	4H	15.79	16.25	16.74	17.21	18.42	15.43	15.88	16.38	16.84	18.05
	6H	16.47	16.84	17.44	17.82	19.03	16.11	16.48	17.07	17.45	18.67
	8H	16.72	17.05	17.69	18.01	19.28	16.35	16.67	17.32	17.64	18.91