

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: P908873

Luminaire Tested: DFN2DIP-PN4F0-110D090US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P908873
REPORT IS A COMBINATION OF REPORTS P901233 AND P898053
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D090US840-FLLONL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

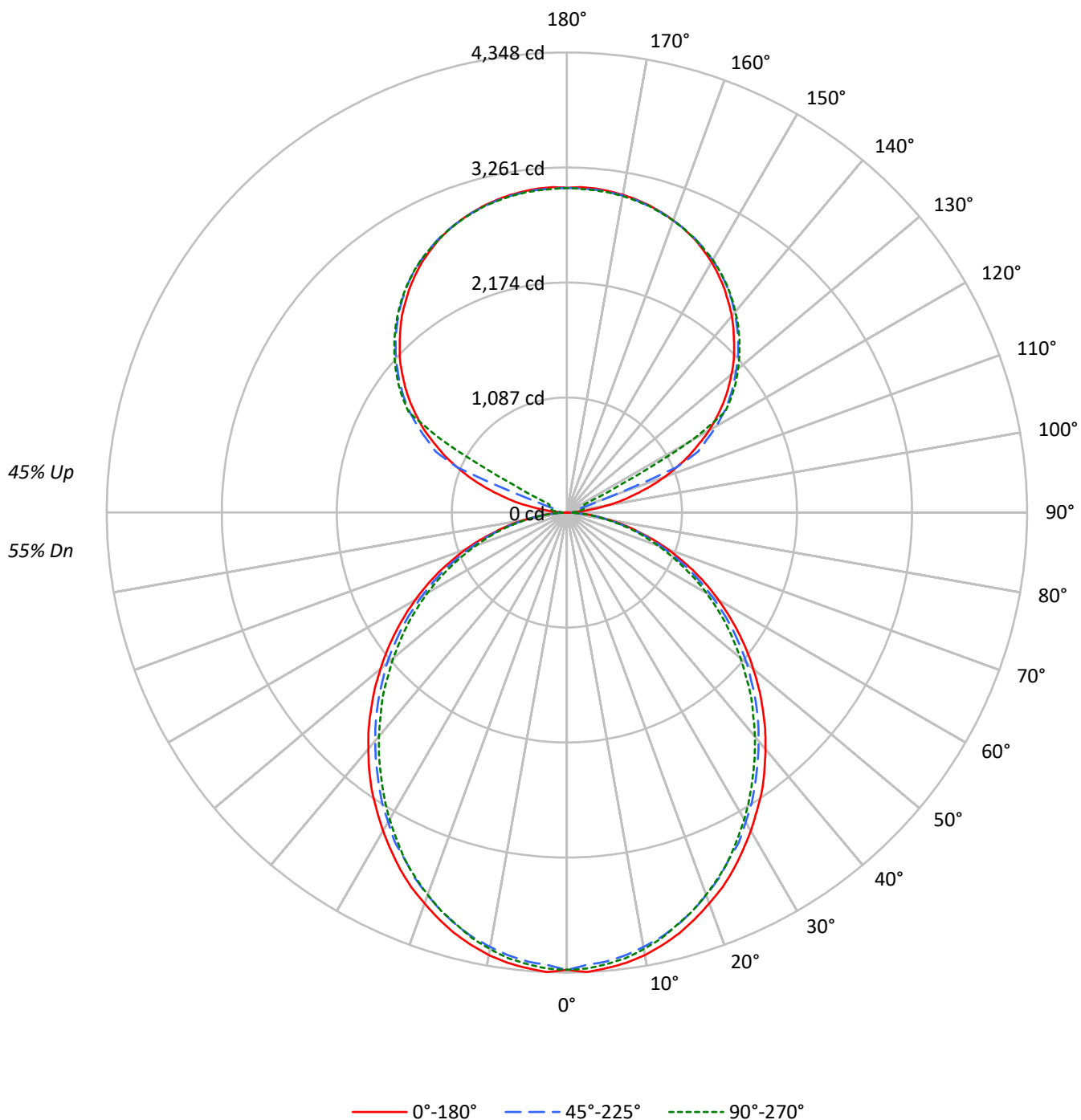
Lumens per Lamp: N/A
Luminaire Lumens: 19995.3 lumens
Efficiency: N/A
Efficacy: 110.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.9
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: P908873

CATALOG NUMBER: DFN2DIP-PN4F0-110D090US840-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P908873

CATALOG NUMBER: DFN2DIP-PN4F0-110D090US840-FLLONL

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	30	10
RCR																	
0	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	99	95	91	87	92	88	85	81	76	73	71	64	62	61	54	52	51
2	90	83	76	71	83	77	71	67	66	62	59	56	53	51	47	45	43
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37
4	75	64	56	50	70	60	53	47	52	46	42	44	40	37	37	34	32
5	69	57	49	43	64	54	46	41	47	41	36	40	35	32	34	30	28
6	64	51	43	37	59	48	41	35	42	36	32	36	32	28	31	27	24
7	59	46	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22
8	55	42	34	29	51	40	33	28	35	29	25	30	25	22	26	22	19
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3155	3155	3155
5°	3160	3112	3133
10°	3135	3070	3091
15°	3088	3020	3025
20°	3026	2950	2958
25°	2964	2867	2880
30°	2887	2789	2781
35°	2813	2697	2676
40°	2722	2605	2576
45°	2632	2512	2474
50°	2533	2414	2356
55°	2430	2302	2247
60°	2313	2168	2123
65°	2186	2029	1976
70°	2023	1861	1818
75°	1798	1659	1674
80°	1528	1401	1396
85°	1105	957	934

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2632 cd/sqm

TEST NUMBER: P908873

CATALOG NUMBER: DFN2DIP-PN4F0-110D090US840-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.0
10°-20°	1144.7	5.7
20°-30°	1682.2	8.4
30°-40°	1953.7	9.8
40°-50°	1951.3	9.8
50°-60°	1701.5	8.5
60°-70°	1257.8	6.3
70°-80°	711.6	3.6
80°-90°	193.2	1.0
90°-100°	101.2	0.5
100°-110°	377.0	1.9
110°-120°	1000.0	5.0
120°-130°	1658.6	8.3
130°-140°	1761.8	8.8
140°-150°	1637.4	8.2
150°-160°	1316.4	6.6
160°-170°	848.2	4.2
170°-180°	292.0	1.5
0°-30°	3233.7	16.2
0°-40°	5187.4	25.9
0°-60°	8840.2	44.2
0°-90°	11002.8	55.0
90°-120°	1478.2	7.4
90°-150°	6535.9	32.7
90°-180°	8992.0	45.0
0°-180°	19995.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4115	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1714
35°	3213	3172	3105	3080	3059	2006
45°	2614	2585	2523	2477	2461	2018
55°	1979	1954	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	2	27	44	56	60	18
95°	144	71	86	98	95	171
105°	675	741	135	160	169	721
115°	1276	1314	1370	342	182	1256
125°	1804	1833	1876	1891	1898	1609
135°	2233	2268	2288	2311	2306	1725
145°	2590	2588	2626	2641	2630	1620
155°	2852	2832	2859	2872	2854	1314
165°	3005	2992	2999	3014	2999	849
175°	3074	3058	3063	3078	3056	293
180°	3067	3067	3067	3067	3067	

TEST NUMBER: P908873

CATALOG NUMBER: DFN2DIP-PN4F0-110D090US840-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4322.4	4322.4	4322.4	4322.4	4322.4
2.5°	4347.5	4326.8	4280.9	4322.4	4314.4
5°	4322.4	4306.1	4260.2	4293.2	4285.4
7.5°	4293.2	4268.6	4222.8	4256.3	4247.9
10°	4247.9	4218.7	4168.9	4201.9	4189.6
12.5°	4185.3	4160.5	4110.8	4131.5	4123.1
15°	4114.7	4090.0	4035.7	4052.5	4031.8
17.5°	4027.3	4002.7	3948.5	3969.2	3948.5
20°	3931.7	3907.0	3848.8	3861.1	3844.9
22.5°	3836.5	3798.9	3744.7	3744.7	3736.3
25°	3724.0	3691.0	3620.4	3628.3	3620.4
27.5°	3599.2	3570.1	3516.3	3503.9	3483.2
30°	3474.8	3441.3	3379.1	3366.8	3350.0
32.5°	3341.6	3317.0	3250.4	3225.2	3208.4
35°	3212.9	3171.5	3104.8	3079.7	3059.0
37.5°	3067.4	3029.9	2963.3	2934.2	2913.5
40°	2917.9	2884.4	2817.8	2780.8	2764.0
42.5°	2772.4	2738.9	2672.7	2630.8	2606.2
45°	2614.5	2585.4	2522.7	2477.4	2460.6
47.5°	2460.6	2431.6	2364.9	2319.1	2294.3
50°	2298.4	2277.7	2219.4	2161.2	2140.5
52.5°	2140.5	2111.3	2057.6	2011.7	1982.6
55°	1978.6	1953.5	1903.7	1853.8	1833.1
57.5°	1816.3	1795.6	1741.4	1691.5	1674.8
60°	1654.1	1637.8	1579.5	1533.7	1521.4
62.5°	1496.2	1467.1	1425.6	1384.2	1367.5
65°	1334.3	1309.2	1267.8	1230.3	1209.6
67.5°	1168.1	1147.0	1109.9	1080.9	1064.1
70°	1014.2	997.4	960.0	930.9	914.5
72.5°	856.4	839.6	818.9	789.8	777.4
75°	698.0	690.1	668.9	644.3	652.7
77.5°	556.9	540.2	531.8	519.5	507.2
80°	415.9	411.4	403.0	390.7	382.3
82.5°	282.7	282.7	278.7	262.0	262.0
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.6	58.2	45.8	41.4
90°	2.1	26.7	44.2	55.6	59.8
92.5°	55.6	46.7	53.2	57.8	59.8
95°	144.2	70.9	86.4	97.8	95.4
97.5°	259.6	77.8	113.1	119.9	122.0
100°	392.9	88.9	126.5	144.2	148.7
102.5°	539.3	535.0	131.0	155.2	162.1
105°	674.7	741.4	135.4	159.8	168.6
107.5°	832.3	887.7	140.0	164.2	173.2
110°	983.3	1029.8	388.5	166.5	175.3



TEST NUMBER: P908873

CATALOG NUMBER: DFN2DIP-PN4F0-110D090US840-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1125.4	1165.2	1127.5	170.8	177.6
115°	1276.2	1313.8	1369.5	341.8	182.1
117.5°	1407.1	1451.5	1489.3	1171.8	590.4
120°	1553.7	1586.9	1627.0	1653.6	1353.9
122.5°	1677.9	1713.4	1758.0	1771.1	1773.5
125°	1804.3	1833.3	1875.5	1891.1	1897.6
127.5°	1919.8	1950.9	1984.4	2006.5	2008.6
130°	2028.6	2064.3	2088.5	2112.9	2110.9
132.5°	2139.6	2168.6	2192.8	2212.9	2210.8
135°	2232.9	2268.5	2288.3	2310.7	2306.2
137.5°	2330.5	2357.0	2379.4	2401.6	2395.0
140°	2425.8	2443.8	2468.0	2488.0	2477.0
142.5°	2506.0	2521.5	2550.2	2567.9	2556.9
145°	2590.3	2587.9	2625.7	2641.2	2630.1
147.5°	2663.3	2656.8	2694.4	2705.5	2696.7
150°	2734.5	2719.0	2754.5	2767.6	2756.6
152.5°	2794.3	2776.6	2809.8	2823.3	2807.7
155°	2852.1	2832.3	2858.8	2872.1	2854.4
157.5°	2898.7	2881.0	2901.0	2916.6	2898.7
160°	2938.7	2925.3	2938.7	2951.9	2936.4
162.5°	2974.1	2960.8	2971.9	2987.5	2967.5
165°	3005.2	2991.9	2998.6	3014.1	2998.6
167.5°	3029.7	3016.3	3023.0	3038.6	3018.6
170°	3049.7	3036.3	3040.7	3056.3	3036.3
172.5°	3062.9	3049.7	3054.1	3069.7	3049.7
175°	3073.9	3058.4	3062.9	3078.4	3056.3
177.5°	3078.4	3062.9	3065.2	3080.8	3060.8
180°	3067.4	3067.4	3067.4	3067.4	3067.4

TEST NUMBER: P908873

CATALOG NUMBER: DFN2DIP-PN4F0-110D090US840-FLLONL

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	11.72	12.63	12.64	13.56	14.76	11.28	12.19	12.20	13.12	14.32
	3H	13.39	14.20	14.31	15.15	16.37	12.91	13.72	13.83	14.66	15.88
	4H	13.98	14.75	14.92	15.70	16.93	13.49	14.27	14.43	15.21	16.44
	6H	14.39	15.10	15.34	16.05	17.29	13.89	14.61	14.85	15.56	16.80
	8H	14.49	15.17	15.45	16.14	17.38	14.00	14.68	14.96	15.65	16.89
	12H	14.54	15.19	15.51	16.15	17.42	14.04	14.69	15.01	15.65	16.92
4H	2H	12.19	12.96	13.14	13.91	15.14	11.84	12.61	12.78	13.56	14.79
	3H	14.06	14.71	15.02	15.68	16.93	13.66	14.30	14.62	15.28	16.53
	4H	14.78	15.37	15.75	16.34	17.61	14.36	14.95	15.33	15.92	17.19
	6H	15.30	15.81	16.28	16.80	18.07	14.88	15.39	15.86	16.38	17.65
	8H	15.46	15.93	16.43	16.92	18.20	15.03	15.50	16.01	16.49	17.77
	12H	15.53	15.96	16.53	16.96	18.25	15.09	15.52	16.09	16.52	17.81
8H	4H	14.98	15.46	15.96	16.44	17.73	14.61	15.09	15.59	16.07	17.36
	6H	15.62	16.01	16.62	17.04	18.32	15.24	15.64	16.25	16.66	17.95
	8H	15.84	16.19	16.86	17.21	18.50	15.46	15.80	16.47	16.82	18.12
	12H	15.98	16.28	17.00	17.29	18.64	15.58	15.88	16.59	16.89	18.24
12H	4H	14.97	15.40	15.97	16.40	17.69	14.61	15.04	15.61	16.04	17.33
	6H	15.65	16.00	16.66	17.01	18.31	15.29	15.63	16.30	16.65	17.95
	8H	15.90	16.20	16.91	17.21	18.56	15.52	15.83	16.54	16.84	18.18