

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: P911501

Luminaire Tested: DFN2DIP-PN4F0-080D110US850-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P911501
REPORT IS A COMBINATION OF REPORTS P901263 AND P898053
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-080D110US850-FLLONL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

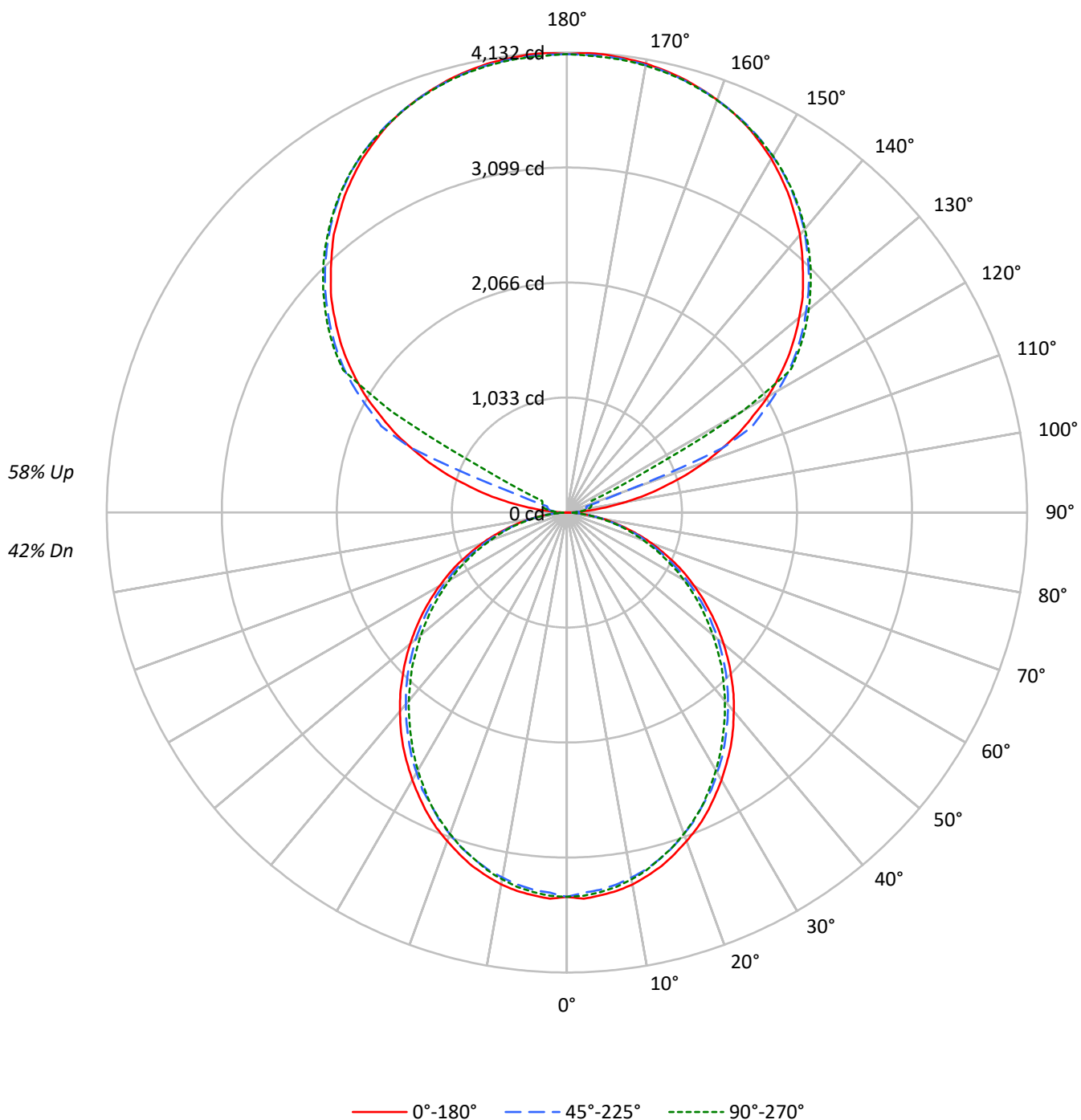
Lumens per Lamp: N/A
Luminaire Lumens: 20860.3 lumens
Efficiency: N/A
Efficacy: 123.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 168.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P911501

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US850-FLLONL

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	30	10
RCR																	
0	105	105	105	105	96	96	96	96	79	79	79	63	63	63	49	49	49
1	96	92	88	84	88	84	81	78	69	67	65	56	54	53	43	42	41
2	87	80	74	69	80	73	68	64	61	57	54	49	46	44	38	36	35
3	80	70	63	57	72	65	58	53	53	49	45	43	40	37	34	31	30
4	73	62	54	49	66	57	50	45	47	42	38	38	35	32	30	28	25
5	67	55	47	41	61	51	44	39	42	37	33	35	31	28	27	24	22
6	62	50	42	36	56	46	39	34	38	33	29	31	27	24	25	22	20
7	57	45	37	31	52	41	34	29	35	29	25	28	24	21	22	20	17
8	53	41	33	28	48	37	31	26	32	26	22	26	22	19	21	18	16
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	27	22	18	22	18	15	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2520	2520	2520
5°	2524	2485	2502
10°	2504	2452	2469
15°	2467	2412	2416
20°	2417	2356	2362
25°	2367	2290	2300
30°	2305	2227	2221
35°	2247	2154	2137
40°	2174	2080	2057
45°	2102	2006	1976
50°	2023	1928	1881
55°	1941	1838	1795
60°	1847	1731	1695
65°	1746	1621	1578
70°	1616	1486	1452
75°	1436	1325	1337
80°	1220	1119	1115
85°	883	764	746

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2195 cd/sqm

TEST NUMBER: P911501

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US850-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	324.9	1.6
10°-20°	914.2	4.4
20°-30°	1343.5	6.4
30°-40°	1560.4	7.5
40°-50°	1558.4	7.5
50°-60°	1358.9	6.5
60°-70°	1004.5	4.8
70°-80°	568.4	2.7
80°-90°	157.3	0.8
90°-100°	135.7	0.7
100°-110°	506.1	2.4
110°-120°	1342.2	6.4
120°-130°	2226.1	10.7
130°-140°	2364.7	11.3
140°-150°	2197.7	10.5
150°-160°	1766.9	8.5
160°-170°	1138.5	5.5
170°-180°	391.9	1.9
0°-30°	2582.6	12.4
0°-40°	4143.0	19.9
0°-60°	7060.4	33.8
0°-90°	8790.5	42.1
90°-120°	1984.0	9.5
90°-150°	8772.5	42.1
90°-180°	12070.0	57.9
0°-180°	20860.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3452	3452	3452	3452	3452	
5°	3452	3439	3402	3429	3423	328
15°	3286	3267	3223	3237	3220	926
25°	2974	2948	2892	2898	2892	1369
35°	2566	2533	2480	2460	2443	1602
45°	2088	2065	2015	1979	1965	1612
55°	1580	1560	1520	1481	1464	1413
65°	1066	1046	1012	983	966	1054
75°	558	551	534	515	521	595
85°	136	133	130	119	116	152
90°	3	36	59	75	80	19
95°	194	95	116	131	128	229
105°	906	995	182	214	226	968
115°	1713	1763	1838	459	244	1686
125°	2422	2461	2517	2538	2547	2160
135°	2997	3045	3071	3101	3095	2315
145°	3477	3474	3524	3545	3530	2174
155°	3828	3801	3837	3855	3831	1764
165°	4034	4016	4025	4046	4025	1140
175°	4126	4105	4111	4132	4102	393
180°	4117	4117	4117	4117	4117	

TEST NUMBER: P911501

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US850-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3452.1	3452.1	3452.1	3452.1	3452.1
2.5°	3472.2	3455.6	3419.0	3452.1	3445.8
5°	3452.1	3439.1	3402.5	3428.9	3422.6
7.5°	3428.9	3409.2	3372.6	3399.3	3392.7
10°	3392.7	3369.4	3329.6	3355.9	3346.2
12.5°	3342.6	3322.9	3283.1	3299.6	3293.0
15°	3286.3	3266.6	3223.2	3236.6	3220.1
17.5°	3216.5	3196.8	3153.4	3170.1	3153.4
20°	3140.1	3120.4	3073.9	3083.8	3070.7
22.5°	3064.1	3034.1	2990.8	2990.8	2984.1
25°	2974.2	2947.8	2891.5	2897.8	2891.5
27.5°	2874.5	2851.3	2808.3	2798.5	2781.9
30°	2775.3	2748.4	2698.9	2689.0	2675.6
32.5°	2668.9	2649.2	2595.9	2575.9	2562.6
35°	2566.0	2533.0	2479.7	2459.7	2443.1
37.5°	2449.8	2419.8	2366.7	2343.4	2326.9
40°	2330.5	2303.6	2250.5	2220.9	2207.5
42.5°	2214.2	2187.4	2134.6	2101.1	2081.5
45°	2088.1	2064.8	2014.8	1978.6	1965.3
47.5°	1965.3	1942.0	1888.7	1852.1	1832.4
50°	1835.6	1819.1	1772.5	1726.0	1709.5
52.5°	1709.5	1686.2	1643.3	1606.7	1583.4
55°	1580.2	1560.1	1520.4	1480.6	1464.0
57.5°	1450.7	1434.2	1390.8	1351.0	1337.6
60°	1321.0	1308.1	1261.5	1224.9	1215.0
62.5°	1194.9	1171.8	1138.6	1105.6	1092.1
65°	1065.7	1045.7	1012.5	982.6	966.0
67.5°	932.9	916.0	886.4	863.2	849.8
70°	810.0	796.6	766.8	743.5	730.4
72.5°	683.9	670.6	654.0	630.8	620.9
75°	557.5	551.2	534.3	514.6	521.2
77.5°	444.8	431.4	424.7	414.9	405.0
80°	332.1	328.6	321.9	312.1	305.3
82.5°	225.8	225.8	222.6	209.2	209.2
85°	136.0	132.7	129.6	119.4	116.2
87.5°	59.9	53.2	46.5	36.6	33.2
90°	2.9	35.7	59.4	74.6	80.3
92.5°	74.6	62.7	71.4	77.5	80.3
95°	193.5	95.2	116.0	131.2	128.1
97.5°	348.4	104.4	151.7	160.9	163.8
100°	527.4	119.2	169.8	193.5	199.5
102.5°	723.7	718.1	175.8	208.4	217.6
105°	905.6	995.1	181.9	214.4	226.5
107.5°	1117.2	1191.4	187.9	220.4	232.4
110°	1319.8	1382.1	521.5	223.6	235.2

TEST NUMBER: P911501

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US850-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1510.6	1563.9	1513.3	229.2	238.4
115°	1712.9	1763.4	1838.2	458.8	244.4
117.5°	1888.7	1948.2	1999.1	1572.8	792.4
120°	2085.4	2129.9	2183.7	2219.4	1817.2
122.5°	2252.0	2299.7	2359.5	2377.3	2380.5
125°	2421.8	2460.8	2517.3	2538.2	2547.0
127.5°	2576.8	2618.5	2663.4	2693.1	2696.0
130°	2722.8	2770.6	2803.1	2836.0	2833.3
132.5°	2871.8	2910.7	2943.3	2970.1	2967.4
135°	2997.1	3044.8	3071.3	3101.4	3095.3
137.5°	3127.9	3163.6	3193.7	3223.4	3214.5
140°	3256.0	3280.0	3312.6	3339.4	3324.6
142.5°	3363.5	3384.3	3422.9	3446.7	3431.8
145°	3476.7	3473.5	3524.1	3545.0	3530.2
147.5°	3574.8	3565.9	3616.4	3631.3	3619.7
150°	3670.2	3649.4	3697.1	3714.8	3700.0
152.5°	3750.5	3726.8	3771.4	3789.5	3768.6
155°	3828.0	3801.4	3837.1	3854.9	3831.2
157.5°	3890.6	3866.9	3893.8	3914.7	3890.6
160°	3944.4	3926.3	3944.4	3962.0	3941.2
162.5°	3991.7	3974.1	3989.0	4009.8	3983.0
165°	4033.5	4015.8	4024.7	4045.5	4024.7
167.5°	4066.4	4048.4	4057.6	4078.5	4051.6
170°	4093.3	4075.2	4081.2	4102.2	4075.2
172.5°	4111.0	4093.3	4099.3	4120.2	4093.3
175°	4125.8	4105.0	4111.0	4131.9	4102.2
177.5°	4131.9	4111.0	4114.2	4135.0	4108.2
180°	4117.1	4117.1	4117.1	4117.1	4117.1

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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	9.72	10.51	10.74	11.54	12.92	9.28	10.07	10.30	11.10	12.48
	3H	11.38	12.09	12.41	13.13	14.53	10.89	11.60	11.92	12.64	14.04
	4H	11.96	12.64	13.01	13.68	15.08	11.47	12.15	12.52	13.19	14.60
	6H	12.36	12.98	13.41	14.03	15.45	11.87	12.49	12.92	13.54	14.95
	8H	12.46	13.06	13.52	14.12	15.53	11.97	12.56	13.03	13.63	15.04
	12H	12.51	13.07	13.58	14.13	15.57	12.01	12.57	13.08	13.63	15.07
4H	2H	10.17	10.85	11.22	11.89	13.29	9.82	10.49	10.87	11.54	12.94
	3H	12.03	12.60	13.09	13.67	15.09	11.63	12.19	12.69	13.26	14.68
	4H	12.75	13.26	13.81	14.32	15.77	12.33	12.85	13.39	13.91	15.35
	6H	13.26	13.71	14.34	14.79	16.22	12.84	13.28	13.91	14.36	15.80
	8H	13.41	13.83	14.49	14.90	16.35	12.98	13.40	14.06	14.47	15.92
	12H	13.48	13.86	14.58	14.95	16.40	13.04	13.42	14.13	14.51	15.96
8H	4H	12.94	13.35	14.01	14.43	15.88	12.57	12.98	13.64	14.06	15.51
	6H	13.57	13.91	14.67	15.03	16.48	13.19	13.54	14.29	14.65	16.10
	8H	13.79	14.09	14.90	15.19	16.66	13.41	13.71	14.51	14.81	16.28
	12H	13.92	14.19	15.03	15.28	16.79	13.52	13.79	14.63	14.88	16.39
12H	4H	12.92	13.30	14.01	14.39	15.84	12.56	12.93	13.65	14.02	15.48
	6H	13.60	13.90	14.70	15.00	16.47	13.24	13.54	14.34	14.64	16.11
	8H	13.84	14.11	14.95	15.20	16.71	13.47	13.73	14.58	14.83	16.34