

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: P906181

Luminaire Tested: DFN2DIP-PN4F0-120D090US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

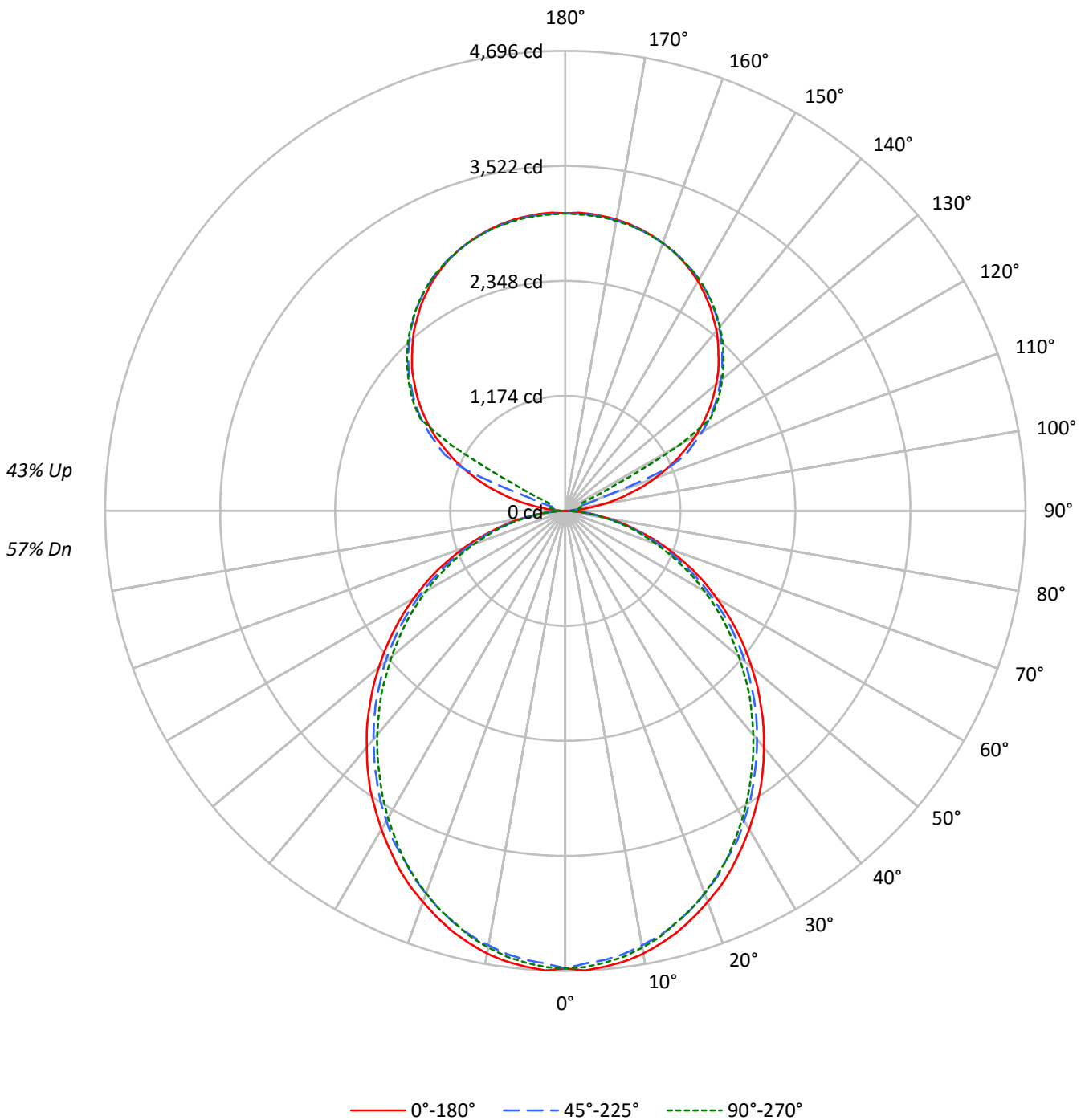
Test Method: LM-79-2019  
Report Number: P906181  
REPORT IS A COMBINATION OF REPORTS P901235 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D090US835-FLLONL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20790.0 lumens  
Efficiency: N/A  
Efficacy: 107.8 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): 192.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P906181  
CATALOG NUMBER: DFN2DIP-PN4F0-120D090US835-FLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P906181

CATALOG NUMBER: DFN2DIP-PN4F0-120D090US835-FLLONL

**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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	63	63	63	57	57	57	57
1	99	95	91	88	92	89	85	82	77	74	72	66	64	62	55	54	53	48	48	48	48
2	91	83	77	72	84	77	72	67	67	63	59	58	55	52	49	47	45	40	40	40	40
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	43	40	38	34	34	34	34
4	76	65	57	50	70	61	53	48	53	47	43	45	41	38	39	35	33	29	29	29	29
5	69	58	49	43	64	54	47	41	47	41	37	41	36	33	35	31	29	26	26	26	26
6	64	52	44	38	59	49	41	36	43	37	32	37	32	29	32	28	25	22	22	22	22
7	59	47	39	33	55	44	37	31	39	33	28	34	29	25	29	25	22	20	20	20	20
8	55	43	35	29	51	40	33	28	35	29	25	31	26	23	27	23	20	18	18	18	18
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	25	21	18	16	16	16	16
10	48	36	28	24	45	34	27	22	30	24	20	26	22	18	23	19	17	15	15	15	15

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

	0°	45°	90°
0°	3408	3408	3408
5°	3414	3361	3384
10°	3386	3317	3339
15°	3336	3262	3268
20°	3269	3187	3195
25°	3202	3097	3111
30°	3118	3013	3004
35°	3039	2914	2891
40°	2941	2814	2783
45°	2843	2713	2673
50°	2737	2608	2545
55°	2625	2486	2428
60°	2499	2342	2293
65°	2361	2192	2135
70°	2186	2010	1965
75°	1943	1792	1808
80°	1651	1514	1508
85°	1194	1033	1009

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2843 cd/sqm



TEST NUMBER: P906181

CATALOG NUMBER: DFN2DIP-PN4F0-120D090US835-FLLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	439.5	2.1
10°-20°	1236.5	5.9
20°-30°	1817.2	8.7
30°-40°	2110.5	10.2
40°-50°	2107.9	10.1
50°-60°	1838.0	8.8
60°-70°	1358.7	6.5
70°-80°	768.7	3.7
80°-90°	208.2	1.0
90°-100°	100.2	0.5
100°-110°	373.4	1.8
110°-120°	990.2	4.8
120°-130°	1642.4	7.9
130°-140°	1744.6	8.4
140°-150°	1621.4	7.8
150°-160°	1303.5	6.3
160°-170°	840.0	4.0
170°-180°	289.1	1.4
0°-30°	3493.1	16.8
0°-40°	5603.7	27.0
0°-60°	9549.6	45.9
0°-90°	11885.3	57.2
90°-120°	1463.7	7.0
90°-150°	6472.0	31.1
90°-180°	8905.0	42.8
0°-180°	20790.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4669	4669	4669	4669	4669	
5°	4669	4652	4602	4638	4629	443
15°	4445	4418	4360	4378	4355	1252
25°	4023	3987	3911	3920	3911	1851
35°	3471	3426	3354	3327	3304	2167
45°	2824	2793	2725	2676	2658	2180
55°	2137	2110	2056	2003	1980	1911
65°	1442	1414	1370	1329	1307	1425
75°	754	746	723	696	705	805
85°	184	180	175	162	157	205
90°	2	26	44	55	59	19
95°	143	70	86	97	94	169
105°	668	734	134	158	167	714
115°	1264	1301	1356	338	180	1244
125°	1787	1815	1857	1873	1879	1594
135°	2211	2246	2266	2288	2284	1708
145°	2565	2563	2600	2615	2604	1604
155°	2824	2805	2831	2844	2826	1301
165°	2976	2963	2969	2985	2969	841
175°	3044	3028	3033	3048	3026	290
180°	3037	3037	3037	3037	3037	



TEST NUMBER: P906181

CATALOG NUMBER: DFN2DIP-PN4F0-120D090US835-FLLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4669.3	4669.3	4669.3	4669.3	4669.3
2.5°	4696.4	4674.0	4624.5	4669.3	4660.7
5°	4669.3	4651.6	4602.1	4637.8	4629.2
7.5°	4637.8	4611.1	4561.6	4597.8	4588.8
10°	4588.8	4557.3	4503.5	4539.2	4525.9
12.5°	4521.1	4494.4	4440.6	4463.0	4453.9
15°	4444.9	4418.2	4359.6	4377.7	4355.3
17.5°	4350.6	4323.9	4265.3	4287.7	4265.3
20°	4247.2	4220.5	4157.7	4171.0	4153.4
22.5°	4144.3	4103.8	4045.2	4045.2	4036.2
25°	4022.8	3987.1	3910.9	3919.5	3910.9
27.5°	3888.0	3856.6	3798.5	3785.1	3762.8
30°	3753.7	3717.5	3650.3	3637.0	3618.9
32.5°	3609.8	3583.2	3511.2	3484.1	3466.0
35°	3470.7	3426.0	3354.0	3326.9	3304.5
37.5°	3313.5	3273.1	3201.1	3169.7	3147.3
40°	3152.1	3115.9	3043.9	3003.9	2985.8
42.5°	2994.9	2958.7	2887.2	2842.0	2815.3
45°	2824.3	2792.9	2725.2	2676.2	2658.1
47.5°	2658.1	2626.6	2554.7	2505.2	2478.5
50°	2482.8	2460.4	2397.5	2334.6	2312.2
52.5°	2312.2	2280.8	2222.7	2173.1	2141.7
55°	2137.4	2110.3	2056.4	2002.6	1980.2
57.5°	1962.1	1939.7	1881.1	1827.3	1809.2
60°	1786.8	1769.2	1706.3	1656.8	1643.4
62.5°	1616.3	1584.8	1540.1	1495.3	1477.2
65°	1441.5	1414.3	1369.5	1329.0	1306.7
67.5°	1261.9	1239.0	1199.0	1167.6	1149.5
70°	1095.6	1077.5	1037.0	1005.6	988.0
72.5°	925.1	907.0	884.6	853.2	839.8
75°	754.1	745.5	722.6	696.0	705.0
77.5°	601.6	583.5	574.5	561.1	547.8
80°	449.2	444.4	435.4	422.1	413.0
82.5°	305.3	305.3	301.1	283.0	283.0
85°	183.9	179.6	175.3	161.5	157.2
87.5°	81.0	71.9	62.9	49.5	44.8
90°	2.1	26.4	43.8	55.1	59.2
92.5°	55.1	46.2	52.7	57.2	59.2
95°	142.8	70.2	85.6	96.8	94.5
97.5°	257.1	77.0	112.0	118.7	120.8
100°	389.1	88.0	125.3	142.8	147.2
102.5°	534.0	529.8	129.7	153.7	160.5
105°	668.1	734.2	134.1	158.2	167.0
107.5°	824.2	879.0	138.6	162.6	171.5
110°	973.7	1019.7	384.7	164.9	173.6



TEST NUMBER: P906181

CATALOG NUMBER: DFN2DIP-PN4F0-120D090US835-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1114.4	1153.8	1116.5	169.1	175.9
115°	1263.7	1301.0	1356.1	338.5	180.3
117.5°	1393.4	1437.3	1474.8	1160.4	584.6
120°	1538.5	1571.4	1611.1	1637.4	1340.7
122.5°	1661.5	1696.7	1740.8	1753.8	1756.2
125°	1786.7	1815.4	1857.2	1872.6	1879.1
127.5°	1901.0	1931.8	1965.0	1986.9	1989.0
130°	2008.8	2044.1	2068.1	2092.3	2090.3
132.5°	2118.7	2147.4	2171.4	2191.3	2189.2
135°	2211.1	2246.3	2265.9	2288.1	2283.7
137.5°	2307.7	2334.0	2356.2	2378.1	2371.6
140°	2402.1	2419.9	2443.9	2463.7	2452.8
142.5°	2481.5	2496.9	2525.3	2542.8	2531.9
145°	2565.0	2562.6	2600.0	2615.4	2604.4
147.5°	2637.3	2630.8	2668.1	2679.1	2670.4
150°	2707.8	2692.4	2727.6	2740.6	2729.7
152.5°	2767.0	2749.5	2782.4	2795.7	2780.3
155°	2824.2	2804.6	2830.9	2844.0	2826.5
157.5°	2870.4	2852.9	2872.7	2888.1	2870.4
160°	2910.0	2896.7	2910.0	2923.1	2907.7
162.5°	2945.0	2931.9	2942.9	2958.3	2938.5
165°	2975.8	2962.7	2969.3	2984.7	2969.3
167.5°	3000.1	2986.8	2993.5	3008.9	2989.1
170°	3019.9	3006.6	3011.0	3026.4	3006.6
172.5°	3033.0	3019.9	3024.3	3039.7	3019.9
175°	3043.9	3028.5	3033.0	3048.3	3026.4
177.5°	3048.3	3033.0	3035.3	3050.7	3030.9
180°	3037.4	3037.4	3037.4	3037.4	3037.4



TEST NUMBER: P906181  
 CATALOG NUMBER: DFN2DIP-PN4F0-120D090US835-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	12.18	13.11	13.07	14.02	15.18	11.74	12.67	12.63	13.58	14.74
	3H	13.84	14.68	14.75	15.60	16.79	13.36	14.19	14.27	15.12	16.31
	4H	14.44	15.23	15.36	16.15	17.35	13.95	14.74	14.87	15.67	16.87
	6H	14.84	15.57	15.77	16.50	17.72	14.35	15.08	15.28	16.01	17.22
	8H	14.95	15.64	15.89	16.59	17.81	14.46	15.15	15.40	16.10	17.31
	12H	15.00	15.66	15.95	16.61	17.84	14.50	15.16	15.45	16.11	17.34
4H	2H	12.65	13.43	13.57	14.36	15.56	12.29	13.08	13.22	14.01	15.21
	3H	14.52	15.18	15.46	16.14	17.35	14.12	14.78	15.05	15.74	16.95
	4H	15.24	15.84	16.19	16.80	18.03	14.82	15.42	15.77	16.38	17.62
	6H	15.76	16.28	16.72	17.26	18.50	15.34	15.86	16.30	16.83	18.07
	8H	15.92	16.40	16.88	17.37	18.62	15.49	15.97	16.45	16.94	18.19
	12H	15.99	16.43	16.97	17.42	18.68	15.55	15.99	16.53	16.98	18.24
8H	4H	15.44	15.93	16.40	16.90	18.15	15.07	15.56	16.03	16.53	17.78
	6H	16.08	16.48	17.07	17.49	18.75	15.70	16.11	16.69	17.12	18.37
	8H	16.30	16.66	17.30	17.66	18.93	15.92	16.27	16.92	17.27	18.54
	12H	16.44	16.75	17.44	17.75	19.06	16.04	16.35	17.04	17.35	18.66
12H	4H	15.43	15.87	16.41	16.86	18.12	15.07	15.51	16.05	16.49	17.75
	6H	16.11	16.47	17.11	17.47	18.74	15.75	16.10	16.74	17.10	18.37
	8H	16.36	16.67	17.36	17.66	18.98	15.99	16.30	16.99	17.29	18.61