

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: P927828

Luminaire Tested: DFN2DIP-HX4F0-120D090US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927828
REPORT IS A COMBINATION OF REPORTS P900925 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D090US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

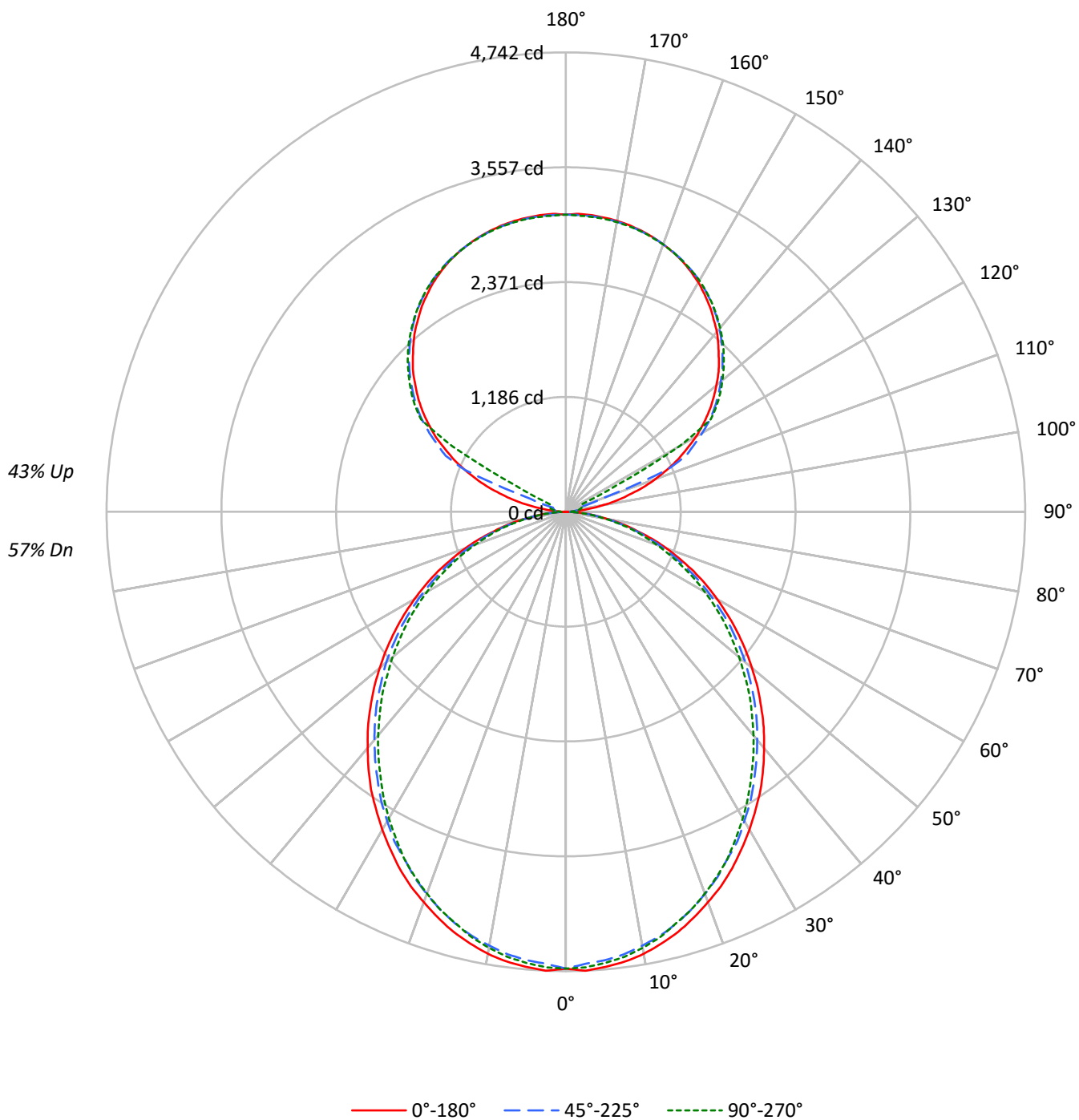
Lumens per Lamp: N/A
Luminaire Lumens: 20993.7 lumens
Efficiency: N/A
Efficacy: 108.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 194.1
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

TEST NUMBER: P927828

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US840-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P927828

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US840-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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	63	63	63
1	99	95	91	88	92	89	85	82	77	74	72	66	64	62	55	54	53
2	91	83	77	72	84	77	72	67	67	63	59	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	43	40	38
4	76	65	57	50	70	61	53	48	53	47	43	45	41	38	39	35	33
5	69	58	49	43	64	54	47	41	47	41	37	41	36	33	35	31	29
6	64	52	44	38	59	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	31	39	33	28	34	29	25	29	25	22
8	55	43	35	29	51	40	33	28	35	29	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	25	21	18
10	48	36	28	24	45	34	27	22	30	24	20	26	22	18	23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3506	3506	3506
5°	3512	3457	3481
10°	3484	3411	3434
15°	3433	3355	3360
20°	3364	3278	3285
25°	3295	3185	3198
30°	3209	3098	3087
35°	3128	2996	2970
40°	3027	2893	2859
45°	2927	2790	2745
50°	2818	2681	2613
55°	2704	2556	2492
60°	2574	2407	2353
65°	2433	2253	2189
70°	2254	2065	2013
75°	2005	1840	1850
80°	1706	1554	1539
85°	1238	1059	1024

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2927 cd/sqm

TEST NUMBER: P927828

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US840-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	443.8	2.1
10°-20°	1248.6	5.9
20°-30°	1835.0	8.7
30°-40°	2131.2	10.2
40°-50°	2128.6	10.1
50°-60°	1856.0	8.8
60°-70°	1372.0	6.5
70°-80°	776.3	3.7
80°-90°	210.3	1.0
90°-100°	101.1	0.5
100°-110°	377.0	1.8
110°-120°	999.9	4.8
120°-130°	1658.4	7.9
130°-140°	1761.7	8.4
140°-150°	1637.3	7.8
150°-160°	1316.3	6.3
160°-170°	848.2	4.0
170°-180°	291.9	1.4
0°-30°	3527.4	16.8
0°-40°	5658.6	27.0
0°-60°	9643.2	45.9
0°-90°	12001.8	57.2
90°-120°	1478.1	7.0
90°-150°	6535.5	31.1
90°-180°	8992.0	42.8
0°-180°	20993.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4715	4715	4715	4715	4715	
5°	4715	4697	4647	4683	4675	448
15°	4488	4462	4402	4421	4398	1264
25°	4062	4026	3949	3958	3949	1869
35°	3505	3460	3387	3360	3337	2189
45°	2852	2820	2752	2702	2684	2201
55°	2158	2131	2077	2022	2000	1930
65°	1456	1428	1383	1342	1320	1439
75°	762	753	730	703	712	813
85°	186	181	177	163	159	207
90°	2	27	44	56	60	19
95°	144	71	86	98	95	171
105°	675	741	135	160	169	721
115°	1276	1314	1369	342	182	1256
125°	1804	1833	1875	1891	1898	1609
135°	2233	2268	2288	2310	2306	1725
145°	2590	2588	2626	2641	2630	1620
155°	2852	2832	2859	2872	2854	1314
165°	3005	2992	2998	3014	2998	849
175°	3074	3058	3063	3078	3056	293
180°	3067	3067	3067	3067	3067	

TEST NUMBER: P927828

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US840-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4715.1	4715.1	4715.1	4715.1	4715.1
2.5°	4742.4	4719.8	4669.8	4715.1	4706.4
5°	4715.1	4697.2	4647.2	4683.3	4674.6
7.5°	4683.3	4656.3	4606.3	4642.9	4633.8
10°	4633.8	4602.0	4547.6	4583.7	4570.3
12.5°	4565.4	4538.4	4484.1	4506.7	4497.5
15°	4488.5	4461.5	4402.3	4420.6	4398.0
17.5°	4393.2	4366.3	4307.1	4329.7	4307.1
20°	4288.8	4261.9	4198.4	4211.9	4194.1
22.5°	4184.9	4144.0	4084.8	4084.8	4075.8
25°	4062.2	4026.2	3949.2	3957.9	3949.2
27.5°	3926.1	3894.4	3835.7	3822.2	3799.7
30°	3790.5	3753.9	3686.1	3672.6	3654.4
32.5°	3645.2	3618.3	3545.6	3518.2	3500.0
35°	3504.7	3459.6	3386.9	3359.5	3336.9
37.5°	3346.0	3305.2	3232.5	3200.8	3178.1
40°	3183.0	3146.4	3073.7	3033.3	3015.1
42.5°	3024.3	2987.7	2915.5	2869.9	2842.9
45°	2852.0	2820.3	2751.9	2702.4	2684.1
47.5°	2684.1	2652.3	2579.7	2529.8	2502.8
50°	2507.1	2484.5	2421.0	2357.5	2334.9
52.5°	2334.9	2303.2	2244.5	2194.4	2162.7
55°	2158.3	2131.0	2076.6	2022.2	1999.6
57.5°	1981.3	1958.7	1899.5	1845.2	1826.9
60°	1804.3	1786.5	1723.0	1673.0	1659.5
62.5°	1632.1	1600.3	1555.2	1510.0	1491.7
65°	1455.6	1428.2	1382.9	1342.0	1319.5
67.5°	1274.3	1251.1	1210.8	1179.0	1160.8
70°	1106.3	1088.1	1047.2	1015.5	997.7
72.5°	934.2	915.9	893.3	861.6	848.0
75°	761.5	752.8	729.7	702.8	711.9
77.5°	607.5	589.2	580.1	566.6	553.2
80°	453.6	448.8	439.7	426.2	417.0
82.5°	308.3	308.3	304.1	285.8	285.8
85°	185.7	181.4	177.0	163.1	158.7
87.5°	81.8	72.6	63.5	50.0	45.2
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	97.7	95.4
97.5°	259.6	77.8	113.1	119.9	122.0
100°	392.9	88.9	126.5	144.2	148.6
102.5°	539.2	535.0	131.0	155.2	162.1
105°	674.6	741.4	135.4	159.8	168.6
107.5°	832.3	887.6	140.0	164.2	173.2
110°	983.2	1029.7	388.5	166.5	175.3



TEST NUMBER: P927828

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US840-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1125.3	1165.1	1127.4	170.8	177.6
115°	1276.1	1313.7	1369.4	341.8	182.1
117.5°	1407.1	1451.4	1489.3	1171.8	590.3
120°	1553.6	1586.8	1626.9	1653.4	1353.8
122.5°	1677.8	1713.3	1757.9	1771.0	1773.4
125°	1804.2	1833.2	1875.4	1891.0	1897.5
127.5°	1919.6	1950.7	1984.3	2006.4	2008.5
130°	2028.5	2064.1	2088.4	2112.8	2110.8
132.5°	2139.5	2168.4	2192.7	2212.8	2210.7
135°	2232.8	2268.3	2288.1	2310.5	2306.1
137.5°	2330.3	2356.9	2379.3	2401.4	2394.8
140°	2425.6	2443.6	2467.9	2487.8	2476.8
142.5°	2505.8	2521.4	2550.0	2567.7	2556.7
145°	2590.1	2587.7	2625.5	2641.0	2629.9
147.5°	2663.1	2656.6	2694.2	2705.4	2696.6
150°	2734.3	2718.8	2754.3	2767.5	2756.5
152.5°	2794.1	2776.4	2809.7	2823.1	2807.5
155°	2851.9	2832.1	2858.6	2871.9	2854.2
157.5°	2898.5	2880.9	2900.9	2916.4	2898.5
160°	2938.5	2925.1	2938.5	2951.7	2936.2
162.5°	2973.9	2960.6	2971.7	2987.3	2967.3
165°	3005.0	2991.7	2998.4	3014.0	2998.4
167.5°	3029.5	3016.1	3022.8	3038.4	3018.4
170°	3049.5	3036.1	3040.5	3056.1	3036.1
172.5°	3062.7	3049.5	3053.9	3069.5	3049.5
175°	3073.7	3058.2	3062.7	3078.2	3056.1
177.5°	3078.2	3062.7	3065.0	3080.6	3060.6
180°	3067.2	3067.2	3067.2	3067.2	3067.2

TEST NUMBER: P927828

CATALOG NUMBER: DFN2DIP-HX4F0-120D090US840-FLONL

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	12.27	13.20	13.16	14.11	15.28	11.84	12.77	12.73	13.68	14.84
	3H	13.93	14.77	14.84	15.69	16.88	13.46	14.30	14.37	15.22	16.41
	4H	14.53	15.31	15.45	16.24	17.44	14.05	14.84	14.97	15.77	16.97
	6H	14.93	15.66	15.86	16.59	17.80	14.45	15.18	15.39	16.12	17.33
	8H	15.04	15.73	15.98	16.68	17.89	14.56	15.25	15.50	16.21	17.42
	12H	15.09	15.75	16.03	16.69	17.93	14.61	15.27	15.55	16.21	17.45
4H	2H	12.74	13.53	13.66	14.46	15.65	12.39	13.18	13.32	14.11	15.31
	3H	14.61	15.27	15.55	16.23	17.44	14.22	14.88	15.15	15.84	17.05
	4H	15.33	15.93	16.28	16.88	18.12	14.92	15.53	15.87	16.48	17.72
	6H	15.85	16.37	16.81	17.35	18.58	15.44	15.96	16.40	16.94	18.17
	8H	16.00	16.49	16.96	17.46	18.71	15.59	16.07	16.55	17.04	18.30
	12H	16.08	16.52	17.06	17.50	18.76	15.66	16.09	16.64	17.08	18.34
8H	4H	15.53	16.02	16.49	16.99	18.24	15.17	15.66	16.13	16.63	17.88
	6H	16.17	16.57	17.16	17.58	18.83	15.81	16.21	16.79	17.22	18.47
	8H	16.39	16.74	17.39	17.75	19.01	16.02	16.38	17.02	17.38	18.65
	12H	16.53	16.84	17.53	17.83	19.15	16.14	16.45	17.14	17.45	18.76
12H	4H	15.52	15.96	16.50	16.95	18.21	15.17	15.61	16.15	16.59	17.85
	6H	16.20	16.55	17.19	17.55	18.82	15.85	16.20	16.84	17.20	18.47
	8H	16.45	16.76	17.44	17.75	19.07	16.09	16.40	17.09	17.39	18.71