

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: P927792

Luminaire Tested: DFN2DIP-HX4F0-110D090US840-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927792
REPORT IS A COMBINATION OF REPORTS P900923 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US840-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

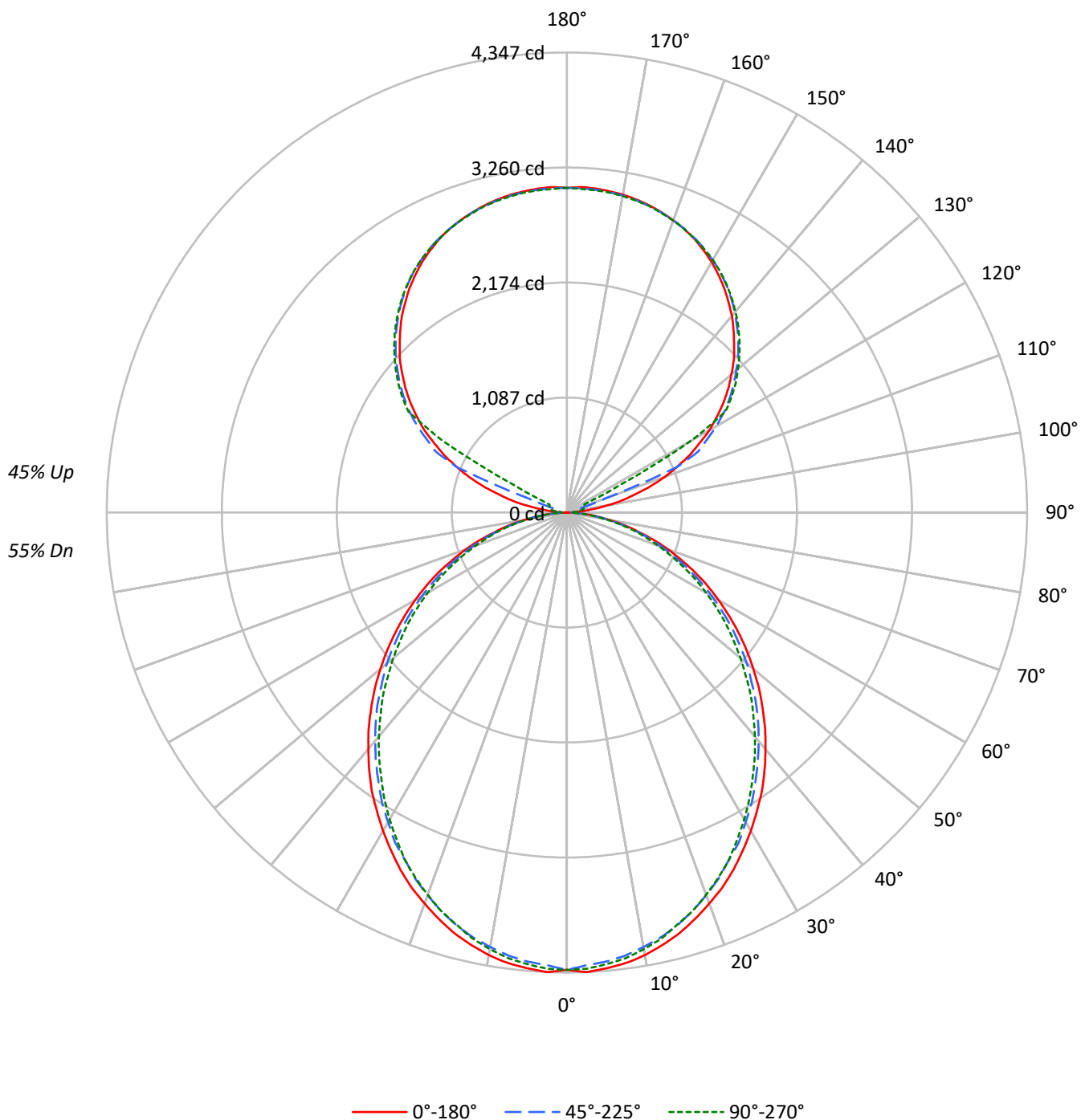
Lumens per Lamp: N/A
Luminaire Lumens: 19994.0 lumens
Efficiency: N/A
Efficacy: 111.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P927792

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US840-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P927792

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US840-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°	3214	3214	3214
5°	3219	3169	3191
10°	3193	3127	3147
15°	3147	3076	3080
20°	3083	3005	3011
25°	3021	2919	2931
30°	2942	2840	2830
35°	2867	2746	2723
40°	2775	2652	2621
45°	2684	2557	2516
50°	2583	2458	2395
55°	2478	2343	2284
60°	2360	2206	2157
65°	2230	2065	2006
70°	2066	1893	1845
75°	1838	1687	1696
80°	1564	1425	1411
85°	1135	971	938

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2684 cd/sqm

TEST NUMBER: P927792

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US840-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.0
10°-20°	1144.6	5.7
20°-30°	1682.1	8.4
30°-40°	1953.6	9.8
40°-50°	1951.2	9.8
50°-60°	1701.4	8.5
60°-70°	1257.7	6.3
70°-80°	711.6	3.6
80°-90°	193.2	1.0
90°-100°	101.1	0.5
100°-110°	377.0	1.9
110°-120°	999.9	5.0
120°-130°	1658.4	8.3
130°-140°	1761.7	8.8
140°-150°	1637.3	8.2
150°-160°	1316.3	6.6
160°-170°	848.2	4.2
170°-180°	291.9	1.5
0°-30°	3233.4	16.2
0°-40°	5187.0	25.9
0°-60°	8839.6	44.2
0°-90°	11002.1	55.0
90°-120°	1478.1	7.4
90°-150°	6535.5	32.7
90°-180°	8992.0	45.0
0°-180°	19994.0	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°	4114	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1713
35°	3213	3171	3105	3080	3059	2006
45°	2614	2585	2523	2477	2460	2018
55°	1978	1953	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	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: P927792

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US840-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4322.1	4322.1	4322.1	4322.1	4322.1
2.5°	4347.2	4326.5	4280.6	4322.1	4314.2
5°	4322.1	4305.8	4259.9	4293.0	4285.1
7.5°	4293.0	4268.3	4222.5	4256.0	4247.6
10°	4247.6	4218.4	4168.7	4201.7	4189.4
12.5°	4185.0	4160.3	4110.5	4131.2	4122.8
15°	4114.4	4089.7	4035.5	4052.2	4031.5
17.5°	4027.1	4002.4	3948.2	3968.9	3948.2
20°	3931.5	3906.7	3848.5	3860.9	3844.6
22.5°	3836.2	3798.7	3744.4	3744.4	3736.1
25°	3723.7	3690.7	3620.1	3628.1	3620.1
27.5°	3598.9	3569.8	3516.0	3503.7	3483.0
30°	3474.6	3441.1	3378.9	3366.6	3349.8
32.5°	3341.4	3316.8	3250.1	3225.0	3208.2
35°	3212.7	3171.3	3104.6	3079.5	3058.8
37.5°	3067.2	3029.7	2963.2	2934.0	2913.3
40°	2917.7	2884.2	2817.6	2780.6	2763.8
42.5°	2772.2	2738.7	2672.5	2630.6	2606.0
45°	2614.4	2585.2	2522.6	2477.2	2460.5
47.5°	2460.5	2431.4	2364.7	2318.9	2294.2
50°	2298.2	2277.5	2219.2	2161.1	2140.4
52.5°	2140.4	2111.2	2057.5	2011.5	1982.4
55°	1978.5	1953.4	1903.6	1853.7	1833.0
57.5°	1816.2	1795.5	1741.3	1691.4	1674.7
60°	1654.0	1637.7	1579.4	1533.6	1521.3
62.5°	1496.1	1467.0	1425.5	1384.1	1367.4
65°	1334.2	1309.1	1267.7	1230.2	1209.5
67.5°	1168.0	1146.9	1109.9	1080.8	1064.0
70°	1014.1	997.4	959.9	930.8	914.5
72.5°	856.3	839.5	818.8	789.8	777.3
75°	698.0	690.1	668.9	644.3	652.6
77.5°	556.9	540.1	531.8	519.4	507.1
80°	415.8	411.4	403.0	390.7	382.3
82.5°	282.6	282.6	278.7	261.9	261.9
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.5	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	97.7	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: P927792

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US840-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: P927792

CATALOG NUMBER: DFN2DIP-HX4F0-110D090US840-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	11.78	12.69	12.69	13.62	14.82	11.35	12.26	12.26	13.19	14.39
	3H	13.45	14.26	14.37	15.20	16.42	12.97	13.79	13.90	14.73	15.95
	4H	14.04	14.81	14.98	15.75	16.98	13.56	14.33	14.50	15.28	16.51
	6H	14.44	15.15	15.39	16.10	17.35	13.96	14.67	14.91	15.63	16.87
	8H	14.55	15.22	15.50	16.19	17.43	14.07	14.75	15.03	15.72	16.96
	12H	14.60	15.24	15.56	16.20	17.47	14.11	14.76	15.08	15.72	16.99
4H	2H	12.25	13.02	13.19	13.97	15.20	11.90	12.68	12.85	13.62	14.85
	3H	14.12	14.76	15.08	15.74	16.99	13.73	14.37	14.68	15.35	16.59
	4H	14.84	15.43	15.80	16.40	17.67	14.43	15.02	15.40	15.99	17.26
	6H	15.36	15.86	16.33	16.86	18.13	14.95	15.45	15.92	16.45	17.72
	8H	15.51	15.98	16.49	16.97	18.25	15.10	15.57	16.07	16.56	17.84
	12H	15.58	16.01	16.58	17.01	18.30	15.16	15.59	16.16	16.59	17.88
8H	4H	15.04	15.51	16.02	16.50	17.78	14.68	15.15	15.66	16.14	17.42
	6H	15.67	16.07	16.68	17.09	18.38	15.31	15.70	16.31	16.73	18.01
	8H	15.90	16.24	16.91	17.26	18.56	15.53	15.87	16.54	16.89	18.19
	12H	16.03	16.33	17.05	17.34	18.69	15.64	15.95	16.66	16.96	18.30
12H	4H	15.03	15.45	16.02	16.46	17.75	14.67	15.10	15.67	16.11	17.39
	6H	15.70	16.05	16.72	17.07	18.37	15.35	15.70	16.36	16.71	18.01
	8H	15.95	16.25	16.97	17.26	18.61	15.59	15.90	16.61	16.91	18.25