

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: P929314

Luminaire Tested: DFN2DIP-HX4F0-080D110US940-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929314
REPORT IS A COMBINATION OF REPORTS P900954 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-080D110US940-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

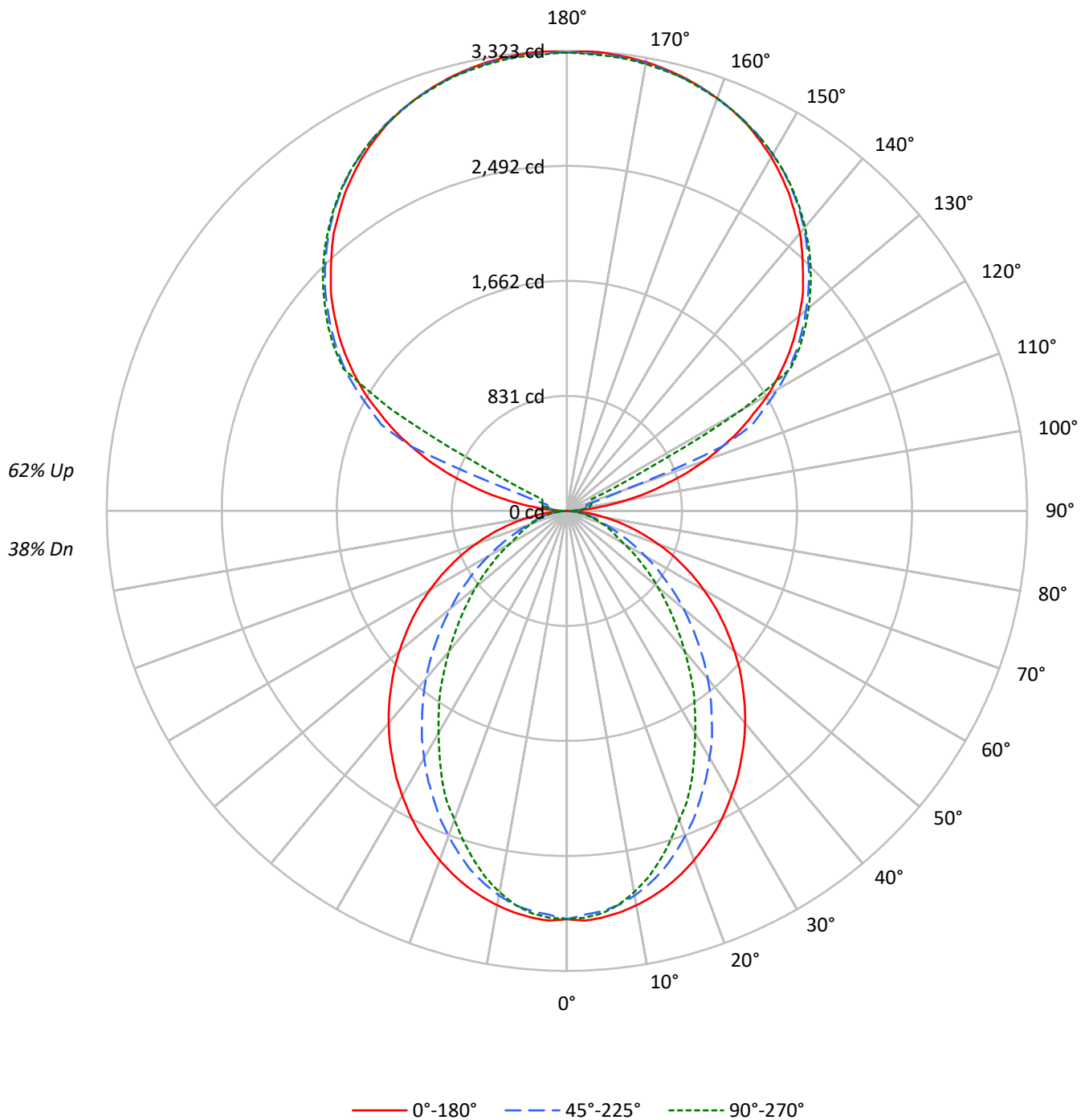
Lumens per Lamp: N/A
Luminaire Lumens: 15779.4 lumens
Efficiency: N/A
Efficacy: 96.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 163.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9613
Total Harmonic Distortion (THDi): 0.083
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P929314

CATALOG NUMBER: DFN2DIP-HX4F0-080D110US940-RLLONL

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	104	104	104	104	95	95	95	95	77	77	77	61	61	61	46	46	46
1	96	91	88	84	87	83	80	77	68	66	64	54	52	51	41	40	39
2	87	80	74	70	79	73	68	64	60	56	53	48	45	43	36	35	34
3	80	71	64	58	72	65	59	54	53	49	45	42	39	37	33	31	29
4	73	63	55	50	66	58	51	46	47	43	39	38	35	32	29	27	25
5	67	56	48	43	61	51	45	40	43	38	34	34	31	28	27	24	22
6	62	50	43	37	56	46	39	35	38	33	30	31	27	25	24	22	20
7	57	46	38	33	52	42	35	30	35	30	26	28	25	22	22	20	18
8	53	41	34	29	48	38	32	27	32	27	23	26	22	20	20	18	16
9	50	38	31	26	45	35	28	24	29	24	21	24	20	18	19	16	14
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2193	2193	2193
5°	2197	2158	2172
10°	2175	2116	2102
15°	2145	2047	1992
20°	2106	1950	1858
25°	2066	1842	1729
30°	2011	1732	1565
35°	1958	1613	1421
40°	1904	1490	1255
45°	1841	1353	1105
50°	1776	1215	959
55°	1708	1068	818
60°	1630	913	674
65°	1539	757	606
70°	1430	610	549
75°	1293	538	500
80°	1094	452	434
85°	765	303	327

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1841 cd/sqm

TEST NUMBER: P929314

CATALOG NUMBER: DFN2DIP-HX4F0-080D110US940-RLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	276.4	1.8
10°-20°	758.8	4.8
20°-30°	1065.3	6.8
30°-40°	1161.3	7.4
40°-50°	1067.3	6.8
50°-60°	838.3	5.3
60°-70°	545.6	3.5
70°-80°	280.9	1.8
80°-90°	77.5	0.5
90°-100°	109.2	0.7
100°-110°	407.0	2.6
110°-120°	1079.6	6.8
120°-130°	1790.5	11.3
130°-140°	1902.0	12.1
140°-150°	1767.7	11.2
150°-160°	1421.2	9.0
160°-170°	915.7	5.8
170°-180°	315.2	2.0
0°-30°	2100.6	13.3
0°-40°	3261.8	20.7
0°-60°	5167.4	32.7
0°-90°	6071.4	38.5
90°-120°	1595.8	10.1
90°-150°	7055.9	44.7
90°-180°	9708.0	61.5
0°-180°	15779.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2949	2949	2949	2949	2949	
5°	2949	2936	2901	2925	2917	280
15°	2805	2776	2685	2634	2608	790
25°	2546	2461	2285	2175	2135	1171
35°	2194	2058	1823	1655	1596	1373
45°	1794	1615	1335	1145	1081	1385
55°	1364	1156	867	707	657	1219
65°	921	704	464	374	366	913
75°	491	304	214	195	192	519
85°	115	59	51	51	51	132
90°	2	29	48	60	65	15
95°	156	76	93	106	103	184
105°	728	800	146	172	182	778
115°	1378	1418	1478	369	197	1356
125°	1948	1979	2025	2042	2049	1737
135°	2411	2449	2470	2495	2490	1862
145°	2796	2794	2834	2851	2839	1749
155°	3079	3058	3086	3101	3082	1419
165°	3244	3230	3237	3254	3237	917
175°	3318	3302	3307	3323	3300	316
180°	3312	3312	3312	3312	3312	

TEST NUMBER: P929314

CATALOG NUMBER: DFN2DIP-HX4F0-080D110US940-RLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2949.3	2949.3	2949.3	2949.3	2949.3
2.5°	2962.6	2949.3	2919.9	2946.7	2941.4
5°	2949.3	2936.0	2901.1	2925.2	2917.3
7.5°	2925.2	2909.3	2872.0	2882.5	2869.1
10°	2893.2	2874.6	2821.3	2813.1	2797.2
12.5°	2853.3	2829.2	2757.0	2741.1	2711.7
15°	2805.2	2775.7	2685.1	2634.4	2607.8
17.5°	2749.1	2706.3	2594.2	2535.6	2492.8
20°	2685.1	2631.6	2498.2	2431.7	2372.7
22.5°	2615.7	2554.2	2399.4	2308.8	2268.8
25°	2546.3	2460.8	2284.7	2175.4	2135.2
27.5°	2463.6	2372.7	2177.9	2052.5	1991.0
30°	2375.6	2273.9	2060.4	1924.5	1852.2
32.5°	2290.0	2167.2	1948.6	1788.3	1721.5
35°	2194.1	2057.8	1823.1	1654.9	1596.0
37.5°	2100.6	1953.7	1705.6	1521.2	1454.7
40°	2001.8	1841.8	1582.7	1393.2	1323.8
42.5°	1900.4	1729.7	1460.0	1262.4	1195.8
45°	1793.6	1614.7	1334.6	1144.9	1080.9
47.5°	1692.3	1502.8	1214.5	1024.8	966.2
50°	1580.1	1390.7	1097.1	912.7	856.9
52.5°	1470.6	1270.3	984.9	808.8	758.1
55°	1363.8	1155.7	867.4	707.4	656.7
57.5°	1254.5	1041.0	763.5	614.0	571.1
60°	1142.3	928.8	653.8	517.9	475.2
62.5°	1033.0	819.5	560.4	432.4	411.2
65°	920.9	704.5	464.4	373.8	365.5
67.5°	814.1	597.8	373.8	328.2	320.3
70°	702.0	493.9	309.5	282.9	272.1
72.5°	595.2	397.6	258.9	237.6	232.2
75°	491.0	304.2	213.5	194.8	192.3
77.5°	387.1	216.0	168.2	157.4	152.1
80°	290.8	154.9	128.0	117.5	117.5
82.5°	202.8	104.2	88.0	82.7	82.7
85°	114.7	58.6	50.7	50.7	50.7
87.5°	42.7	21.2	21.2	18.7	18.7
90°	2.3	28.7	47.8	60.0	64.6
92.5°	60.0	50.4	57.4	62.4	64.6
95°	155.7	76.5	93.3	105.5	103.0
97.5°	280.3	83.9	122.0	129.4	131.7
100°	424.2	95.9	136.6	155.7	160.5
102.5°	582.1	577.6	141.4	167.6	175.0
105°	728.4	800.4	146.3	172.4	182.1
107.5°	898.6	958.3	151.1	177.2	187.0
110°	1061.6	1111.7	419.4	179.8	189.2

TEST NUMBER: P929314

CATALOG NUMBER: DFN2DIP-HX4F0-080D110US940-RLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1215.0	1257.9	1217.2	184.4	191.8
115°	1377.7	1418.4	1478.5	369.0	196.6
117.5°	1519.2	1567.0	1607.9	1265.0	637.3
120°	1677.3	1713.2	1756.4	1785.2	1461.6
122.5°	1811.4	1849.7	1897.8	1912.1	1914.7
125°	1947.9	1979.3	2024.8	2041.5	2048.7
127.5°	2072.6	2106.1	2142.2	2166.1	2168.5
130°	2190.0	2228.5	2254.6	2281.1	2278.9
132.5°	2309.8	2341.1	2367.4	2389.0	2386.7
135°	2410.6	2449.0	2470.3	2494.6	2489.7
137.5°	2515.9	2544.6	2568.8	2592.7	2585.6
140°	2618.9	2638.2	2664.4	2686.0	2674.0
142.5°	2705.3	2722.1	2753.2	2772.2	2760.3
145°	2796.4	2793.8	2834.5	2851.4	2839.4
147.5°	2875.3	2868.1	2908.8	2920.8	2911.4
150°	2952.1	2935.3	2973.7	2987.9	2976.0
152.5°	3016.7	2997.6	3033.4	3048.0	3031.2
155°	3079.0	3057.6	3086.3	3100.6	3081.5
157.5°	3129.3	3110.2	3131.9	3148.7	3129.3
160°	3172.6	3158.0	3172.6	3186.8	3170.0
162.5°	3210.7	3196.5	3208.4	3225.2	3203.6
165°	3244.3	3230.0	3237.2	3253.9	3237.2
167.5°	3270.7	3256.2	3263.6	3280.4	3258.8
170°	3292.4	3277.8	3282.6	3299.5	3277.8
172.5°	3306.6	3292.4	3297.2	3314.0	3292.4
175°	3318.5	3301.7	3306.6	3323.4	3299.5
177.5°	3323.4	3306.6	3309.1	3325.9	3304.3
180°	3311.5	3311.5	3311.5	3311.5	3311.5

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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	8.70	9.44	9.75	10.50	11.93	4.67	5.41	5.73	6.47	7.90
	3H	10.37	11.03	11.43	12.10	13.55	5.85	6.52	6.92	7.58	9.03
	4H	10.97	11.60	12.05	12.67	14.12	6.30	6.93	7.38	8.00	9.45
	6H	11.39	11.97	12.48	13.04	14.51	6.62	7.20	7.71	8.27	9.74
	8H	11.52	12.07	12.61	13.15	14.61	6.71	7.26	7.80	8.35	9.81
	12H	11.57	12.10	12.67	13.18	14.66	6.75	7.27	7.84	8.35	9.84
4H	2H	8.70	9.33	9.79	10.40	11.86	5.25	5.89	6.34	6.95	8.41
	3H	10.53	11.05	11.62	12.14	13.61	6.60	7.12	7.69	8.22	9.68
	4H	11.22	11.70	12.31	12.78	14.27	7.14	7.63	8.24	8.71	10.20
	6H	11.73	12.14	12.83	13.25	14.73	7.56	7.97	8.66	9.08	10.56
	8H	11.90	12.29	13.00	13.39	14.88	7.69	8.07	8.79	9.17	10.67
	12H	11.99	12.34	13.11	13.45	14.96	7.75	8.10	8.87	9.21	10.71
8H	4H	11.18	11.56	12.28	12.66	14.16	7.42	7.80	8.52	8.90	10.40
	6H	11.74	12.06	12.87	13.20	14.69	7.94	8.25	9.06	9.40	10.89
	8H	11.96	12.24	13.09	13.36	14.87	8.13	8.41	9.26	9.53	11.04
	12H	12.09	12.34	13.23	13.46	15.01	8.25	8.49	9.38	9.61	11.16
12H	4H	11.13	11.47	12.25	12.59	14.09	7.42	7.77	8.54	8.88	10.38
	6H	11.72	12.00	12.85	13.12	14.63	7.99	8.26	9.12	9.39	10.90
	8H	11.94	12.18	13.07	13.30	14.85	8.19	8.44	9.33	9.56	11.11