

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: P929414

Luminaire Tested: DFN2DIP-HX4F0-110D090US940-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929414
REPORT IS A COMBINATION OF REPORTS P900924 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US940-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

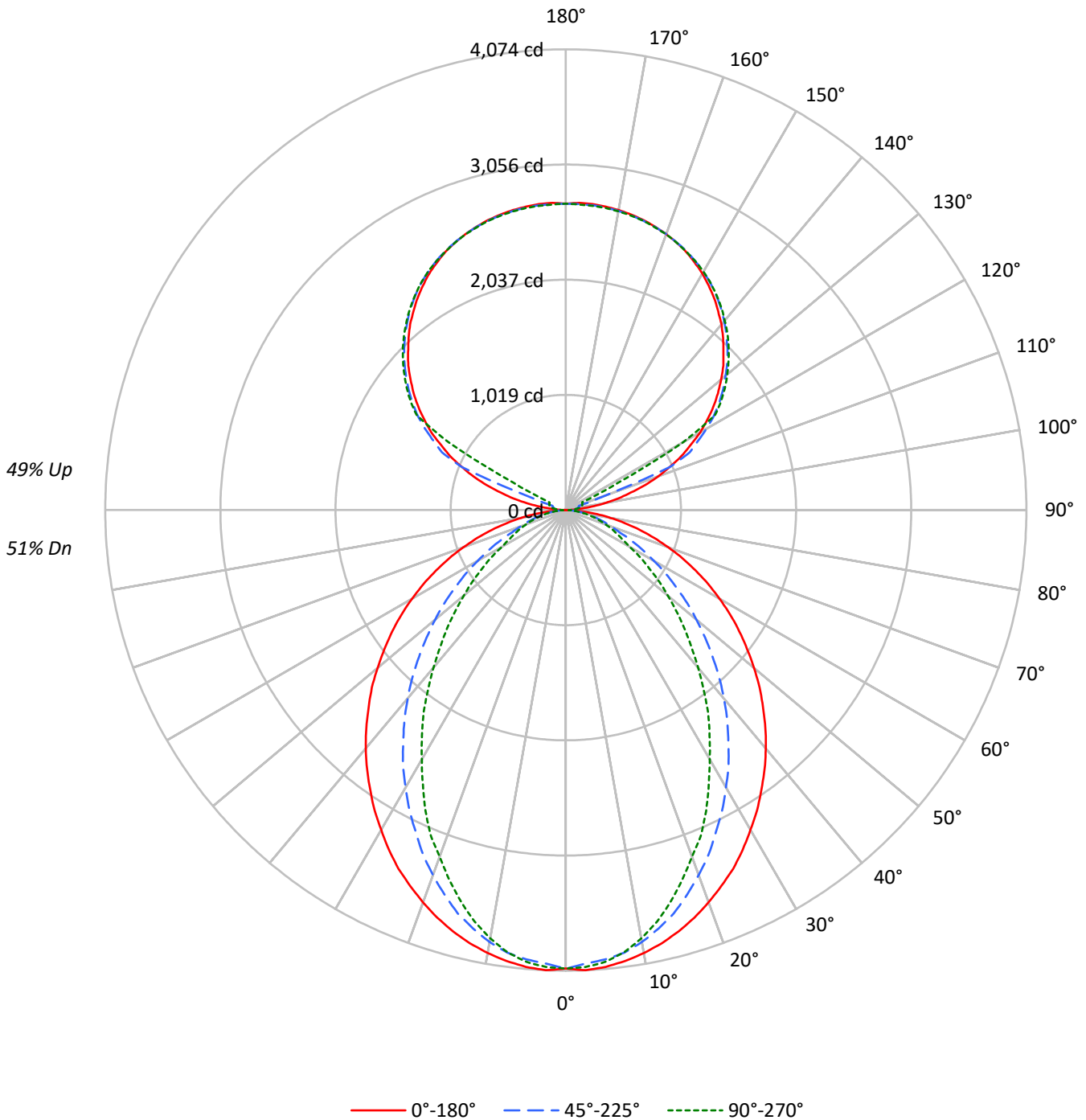
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16287.9 lumens
Efficiency: N/A
Efficacy: 90.4 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: 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

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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	51	51	51	51
1	99	94	91	87	91	87	84	81	74	72	70	62	61	59	51	50	49	44	44	44	44
2	90	83	77	72	83	77	72	68	66	62	59	55	53	50	46	44	42	38	38	38	38
3	83	73	66	61	76	68	62	57	58	54	50	49	46	43	41	39	37	33	33	33	33
4	76	65	58	52	70	61	54	49	52	47	43	44	41	37	37	34	32	28	28	28	28
5	70	58	51	45	64	54	48	42	47	42	37	40	36	33	34	31	28	25	25	25	25
6	64	53	45	39	59	49	42	37	43	37	33	36	32	29	31	27	25	22	22	22	22
7	60	48	40	34	55	45	38	33	39	33	29	33	29	26	28	25	22	20	20	20	20
8	55	43	36	31	51	41	34	29	35	30	26	31	26	23	26	23	20	18	18	18	18
9	52	40	32	27	48	37	31	26	33	27	24	28	24	21	24	21	18	16	16	16	16
10	48	37	29	25	45	34	28	24	30	25	21	26	22	19	22	19	17	15	15	15	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3015	3015	3015
5°	3020	2968	2987
10°	2991	2910	2890
15°	2950	2814	2740
20°	2896	2682	2555
25°	2840	2533	2377
30°	2765	2381	2152
35°	2692	2218	1953
40°	2618	2048	1726
45°	2532	1860	1520
50°	2442	1671	1319
55°	2349	1468	1125
60°	2241	1256	926
65°	2117	1040	834
70°	1966	839	755
75°	1778	740	687
80°	1504	622	596
85°	1051	417	450

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2532 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	380.1	2.3
10°-20°	1043.4	6.4
20°-30°	1464.8	9.0
30°-40°	1596.8	9.8
40°-50°	1467.6	9.0
50°-60°	1152.6	7.1
60°-70°	750.2	4.6
70°-80°	386.2	2.4
80°-90°	103.4	0.6
90°-100°	89.3	0.5
100°-110°	333.0	2.0
110°-120°	883.3	5.4
120°-130°	1465.0	9.0
130°-140°	1556.2	9.6
140°-150°	1446.3	8.9
150°-160°	1162.8	7.1
160°-170°	749.2	4.6
170°-180°	257.9	1.6
0°-30°	2888.3	17.7
0°-40°	4485.0	27.5
0°-60°	7105.2	43.6
0°-90°	8345.0	51.2
90°-120°	1305.7	8.0
90°-150°	5773.1	35.4
90°-180°	7943.0	48.8
0°-180°	16287.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4055	4055	4055	4055	4055	
5°	4055	4037	3989	4022	4011	385
15°	3857	3817	3692	3622	3586	1087
25°	3501	3384	3141	2991	2936	1610
35°	3017	2830	2507	2276	2194	1888
45°	2466	2220	1835	1574	1486	1905
55°	1875	1589	1193	973	903	1676
65°	1266	969	639	514	503	1255
75°	675	418	294	268	264	714
85°	158	81	70	70	70	181
90°	2	24	39	49	53	15
95°	127	63	76	86	84	151
105°	596	655	120	141	149	637
115°	1127	1160	1210	302	161	1110
125°	1594	1619	1657	1670	1676	1421
135°	1972	2004	2021	2041	2037	1524
145°	2288	2286	2319	2333	2323	1431
155°	2519	2502	2525	2537	2521	1161
165°	2654	2643	2649	2662	2649	750
175°	2715	2701	2705	2719	2700	258
180°	2709	2709	2709	2709	2709	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4055.3	4055.3	4055.3	4055.3	4055.3
2.5°	4073.6	4055.3	4014.8	4051.8	4044.4
5°	4055.3	4037.0	3989.1	4022.2	4011.3
7.5°	4022.2	4000.4	3949.0	3963.4	3945.0
10°	3978.2	3952.5	3879.3	3868.0	3846.2
12.5°	3923.3	3890.2	3790.9	3769.1	3728.6
15°	3857.1	3816.6	3692.0	3622.3	3585.7
17.5°	3780.0	3721.2	3567.0	3486.4	3427.6
20°	3692.0	3618.4	3435.0	3343.5	3262.5
22.5°	3596.6	3512.1	3299.2	3174.5	3119.6
25°	3501.2	3383.6	3141.4	2991.1	2935.8
27.5°	3387.5	3262.5	2994.6	2822.1	2737.6
30°	3266.4	3126.6	2833.1	2646.1	2546.8
32.5°	3148.8	2979.8	2679.2	2458.9	2367.0
35°	3016.8	2829.5	2506.8	2275.5	2194.5
37.5°	2888.4	2686.3	2345.2	2091.7	2000.2
40°	2752.4	2532.5	2176.2	1915.7	1820.3
42.5°	2613.0	2378.3	2007.6	1735.8	1644.3
45°	2466.3	2220.2	1835.1	1574.2	1486.3
47.5°	2326.9	2066.4	1670.0	1409.1	1328.5
50°	2172.6	1912.2	1508.5	1255.0	1178.2
52.5°	2022.0	1746.7	1354.2	1112.1	1042.3
55°	1875.2	1589.0	1192.6	972.6	903.0
57.5°	1724.9	1431.3	1049.7	844.2	785.3
60°	1570.7	1277.2	899.0	712.2	653.4
62.5°	1420.4	1126.9	770.6	594.6	565.3
65°	1266.2	968.7	638.6	514.0	502.6
67.5°	1119.5	822.0	514.0	451.3	440.4
70°	965.2	679.1	425.6	389.0	374.2
72.5°	818.4	546.7	355.9	326.7	319.2
75°	675.2	418.2	293.6	267.9	264.4
77.5°	532.3	297.1	231.3	216.5	209.1
80°	399.9	213.0	176.0	161.6	161.6
82.5°	278.8	143.3	121.1	113.7	113.7
85°	157.7	80.6	69.7	69.7	69.7
87.5°	58.8	29.2	29.2	25.7	25.7
90°	1.9	23.5	39.1	49.1	52.8
92.5°	49.1	41.2	47.0	51.0	52.8
95°	127.4	62.6	76.4	86.3	84.3
97.5°	229.3	68.7	99.9	105.9	107.8
100°	347.1	78.5	111.8	127.4	131.3
102.5°	476.3	472.6	115.7	137.1	143.2
105°	595.9	654.9	119.6	141.1	149.0
107.5°	735.2	784.1	123.6	145.0	153.0
110°	868.5	909.6	343.2	147.1	154.9



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	994.0	1029.2	995.9	150.8	156.9
115°	1127.2	1160.5	1209.6	301.9	160.8
117.5°	1242.9	1282.1	1315.5	1035.1	521.5
120°	1372.3	1401.7	1437.1	1460.6	1195.9
122.5°	1482.1	1513.5	1552.8	1564.4	1566.5
125°	1593.7	1619.3	1656.6	1670.4	1676.2
127.5°	1695.7	1723.2	1752.8	1772.3	1774.2
130°	1791.8	1823.3	1844.7	1866.3	1864.5
132.5°	1889.9	1915.5	1936.9	1954.6	1952.8
135°	1972.3	2003.7	2021.2	2041.0	2037.1
137.5°	2058.5	2081.9	2101.7	2121.3	2115.5
140°	2142.7	2158.6	2180.0	2197.6	2187.9
142.5°	2213.5	2227.2	2252.6	2268.2	2258.5
145°	2288.0	2285.8	2319.2	2332.9	2323.1
147.5°	2352.5	2346.7	2379.9	2389.8	2382.0
150°	2415.4	2401.6	2433.0	2444.6	2434.9
152.5°	2468.2	2452.6	2481.9	2493.8	2480.0
155°	2519.2	2501.7	2525.2	2536.8	2521.2
157.5°	2560.4	2544.8	2562.4	2576.2	2560.4
160°	2595.7	2583.9	2595.7	2607.4	2593.7
162.5°	2626.9	2615.3	2625.1	2638.8	2621.1
165°	2654.4	2642.7	2648.6	2662.4	2648.6
167.5°	2676.1	2664.2	2670.2	2683.9	2666.3
170°	2693.8	2681.9	2685.8	2699.5	2681.9
172.5°	2705.4	2693.8	2697.7	2711.4	2693.8
175°	2715.2	2701.4	2705.4	2719.1	2699.5
177.5°	2719.1	2705.4	2707.5	2721.2	2703.6
180°	2709.4	2709.4	2709.4	2709.4	2709.4



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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	11.10	11.94	12.05	12.90	14.16	7.07	7.91	8.02	8.88	10.13
	3H	12.78	13.53	13.74	14.50	15.78	8.26	9.01	9.23	9.99	11.27
	4H	13.39	14.10	14.37	15.07	16.36	8.71	9.42	9.69	10.40	11.69
	6H	13.81	14.46	14.80	15.45	16.75	9.04	9.69	10.03	10.67	11.97
	8H	13.94	14.56	14.93	15.56	16.85	9.13	9.75	10.12	10.75	12.05
	12H	14.00	14.59	15.00	15.58	16.90	9.17	9.77	10.17	10.76	12.08
4H	2H	11.12	11.83	12.10	12.81	14.09	7.67	8.38	8.65	9.36	10.64
	3H	12.95	13.54	13.94	14.55	15.85	9.02	9.61	10.01	10.62	11.92
	4H	13.64	14.18	14.64	15.18	16.51	9.57	10.11	10.57	11.11	12.44
	6H	14.16	14.62	15.17	15.65	16.97	9.99	10.46	11.01	11.48	12.80
	8H	14.34	14.77	15.35	15.78	17.12	10.12	10.56	11.14	11.57	12.91
	12H	14.43	14.82	15.46	15.85	17.20	10.19	10.58	11.22	11.61	12.95
8H	4H	13.61	14.04	14.63	15.06	16.40	9.85	10.29	10.87	11.30	12.64
	6H	14.18	14.54	15.22	15.59	16.93	10.37	10.73	11.41	11.79	13.12
	8H	14.40	14.71	15.44	15.75	17.11	10.57	10.88	11.61	11.92	13.28
	12H	14.54	14.81	15.59	15.85	17.25	10.69	10.96	11.74	12.00	13.40
12H	4H	13.56	13.95	14.60	14.99	16.33	9.86	10.25	10.89	11.28	12.62
	6H	14.15	14.47	15.20	15.51	16.87	10.42	10.74	11.47	11.78	13.14
	8H	14.38	14.65	15.43	15.69	17.09	10.64	10.91	11.69	11.95	13.35