

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: P929350

Luminaire Tested: DFN2DIP-HX4F0-090D110US940-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929350
REPORT IS A COMBINATION OF REPORTS P900956 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D110US940-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

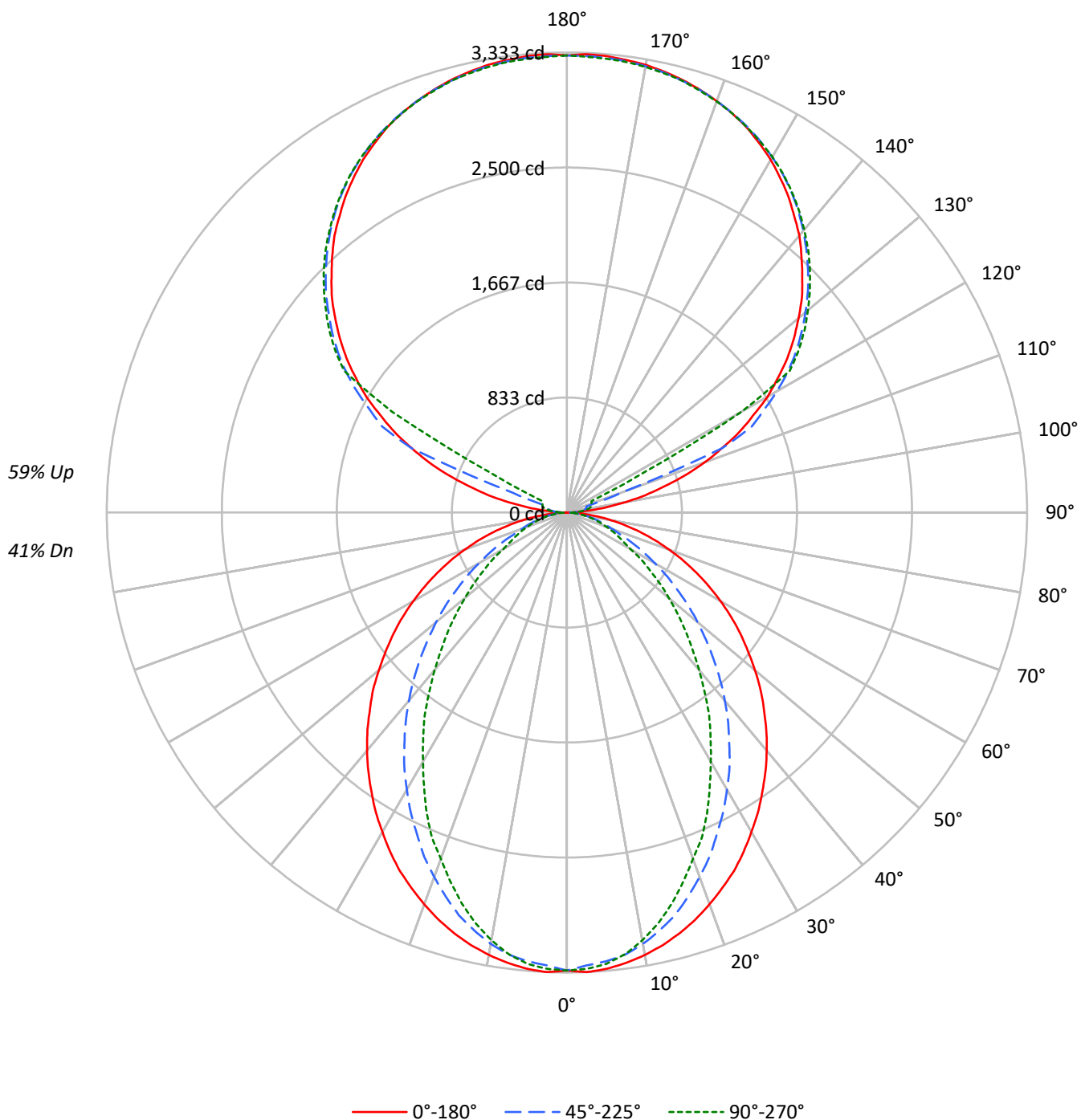
Lumens per Lamp: N/A
Luminaire Lumens: 16537.7 lumens
Efficiency: N/A
Efficacy: 94.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 175.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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
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	105	105	105	105	96	96	96	96	78	78	78	63	63	63	48	48	48
1	96	92	88	85	88	84	81	78	69	67	65	56	54	53	43	42	41
2	88	81	75	70	80	74	69	65	61	58	55	49	47	45	38	37	35
3	80	71	64	59	73	65	59	55	54	50	46	44	41	38	34	32	31
4	74	63	56	50	67	58	52	47	48	44	40	39	36	33	31	29	27
5	68	57	49	43	62	52	45	40	44	38	35	36	32	29	28	26	24
6	63	51	43	38	57	47	40	35	39	34	30	32	28	26	26	23	21
7	58	46	38	33	53	42	36	31	36	31	27	29	26	23	24	21	19
8	54	42	34	29	49	39	32	27	33	28	24	27	23	20	22	19	17
9	50	38	31	26	46	35	29	25	30	25	21	25	21	18	20	17	15
10	47	35	28	23	43	33	26	22	28	23	19	23	19	17	19	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2467	2467	2467
5°	2471	2428	2444
10°	2447	2381	2364
15°	2413	2302	2241
20°	2369	2194	2091
25°	2324	2073	1945
30°	2263	1948	1760
35°	2203	1814	1598
40°	2142	1676	1412
45°	2071	1522	1244
50°	1998	1367	1079
55°	1922	1201	921
60°	1833	1028	758
65°	1732	851	682
70°	1609	687	618
75°	1454	606	562
80°	1230	509	488
85°	860	341	368

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2071 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	311.0	1.9
10°-20°	853.7	5.2
20°-30°	1198.5	7.2
30°-40°	1306.5	7.9
40°-50°	1200.8	7.3
50°-60°	943.0	5.7
60°-70°	613.8	3.7
70°-80°	316.0	1.9
80°-90°	86.5	0.5
90°-100°	109.2	0.7
100°-110°	407.0	2.5
110°-120°	1079.6	6.5
120°-130°	1790.5	10.8
130°-140°	1902.0	11.5
140°-150°	1767.7	10.7
150°-160°	1421.2	8.6
160°-170°	915.7	5.5
170°-180°	315.2	1.9
0°-30°	2363.1	14.3
0°-40°	3669.6	22.2
0°-60°	5813.4	35.2
0°-90°	6829.6	41.3
90°-120°	1595.8	9.6
90°-150°	7055.9	42.7
90°-180°	9708.0	58.7
0°-180°	16537.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3318	3318	3318	3318	3318	
5°	3318	3303	3264	3291	3282	315
15°	3156	3123	3021	2964	2934	889
25°	2865	2768	2570	2447	2402	1317
35°	2468	2315	2051	1862	1796	1545
45°	2018	1817	1501	1288	1216	1558
55°	1534	1300	976	796	739	1371
65°	1036	793	522	420	411	1027
75°	552	342	240	219	216	584
85°	129	66	57	57	57	148
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	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3318.0	3318.0	3318.0	3318.0	3318.0
2.5°	3333.0	3318.0	3284.8	3315.1	3309.1
5°	3318.0	3303.0	3263.8	3290.9	3281.9
7.5°	3290.9	3273.0	3231.0	3242.8	3227.8
10°	3254.9	3233.9	3174.0	3164.7	3146.9
12.5°	3210.0	3182.9	3101.7	3083.8	3050.6
15°	3155.8	3122.7	3020.8	2963.7	2933.8
17.5°	3092.7	3044.7	2918.4	2852.5	2804.4
20°	3020.8	2960.5	2810.4	2735.6	2669.3
22.5°	2942.7	2873.6	2699.3	2597.3	2552.5
25°	2864.7	2768.4	2570.3	2447.3	2402.1
27.5°	2771.6	2669.3	2450.1	2309.0	2239.9
30°	2672.5	2558.2	2318.0	2165.1	2083.8
32.5°	2576.3	2438.0	2192.1	2011.8	1936.6
35°	2468.3	2315.1	2051.0	1861.8	1795.5
37.5°	2363.2	2197.9	1918.8	1711.4	1636.6
40°	2252.0	2072.0	1780.5	1567.4	1489.4
42.5°	2137.9	1945.9	1642.5	1420.2	1345.3
45°	2017.9	1816.6	1501.4	1288.0	1216.0
47.5°	1903.8	1690.7	1366.4	1152.9	1087.0
50°	1777.7	1564.5	1234.2	1026.8	964.0
52.5°	1654.4	1429.2	1108.0	909.8	852.8
55°	1534.2	1300.1	975.8	795.8	738.8
57.5°	1411.3	1171.1	858.9	690.7	642.6
60°	1285.1	1044.9	735.6	582.7	534.6
62.5°	1162.2	922.0	630.5	486.5	462.6
65°	1036.0	792.6	522.4	420.5	411.3
67.5°	915.9	672.5	420.5	369.2	360.3
70°	789.8	555.6	348.2	318.3	306.1
72.5°	669.6	447.2	291.1	267.2	261.3
75°	552.4	342.2	240.2	219.2	216.3
77.5°	435.5	243.1	189.2	177.2	171.1
80°	327.2	174.3	144.0	132.2	132.2
82.5°	228.1	117.2	99.1	93.0	93.0
85°	129.0	65.9	57.0	57.0	57.0
87.5°	48.1	23.9	23.9	21.1	21.1
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

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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	9.42	10.18	10.45	11.22	12.61	5.39	6.15	6.42	7.19	8.58
	3H	11.09	11.77	12.13	12.82	14.23	6.57	7.26	7.62	8.30	9.71
	4H	11.69	12.34	12.75	13.39	14.81	7.02	7.67	8.08	8.72	10.14
	6H	12.11	12.71	13.18	13.76	15.19	7.34	7.94	8.41	8.99	10.42
	8H	12.24	12.80	13.31	13.87	15.30	7.43	8.00	8.50	9.06	10.49
	12H	12.30	12.84	13.37	13.90	15.35	7.47	8.01	8.55	9.07	10.52
4H	2H	9.43	10.07	10.49	11.12	12.54	5.98	6.62	7.04	7.67	9.09
	3H	11.25	11.79	12.32	12.86	14.30	7.32	7.86	8.39	8.94	10.37
	4H	11.94	12.43	13.02	13.50	14.95	7.87	8.36	8.94	9.43	10.88
	6H	12.45	12.88	13.54	13.97	15.41	8.29	8.71	9.37	9.80	11.25
	8H	12.63	13.02	13.71	14.10	15.57	8.42	8.81	9.50	9.89	11.36
	12H	12.72	13.08	13.82	14.17	15.64	8.48	8.83	9.58	9.93	11.40
8H	4H	11.90	12.30	12.99	13.38	14.84	8.15	8.54	9.23	9.62	11.08
	6H	12.47	12.79	13.58	13.92	15.38	8.66	8.99	9.77	10.11	11.57
	8H	12.69	12.97	13.80	14.08	15.56	8.86	9.14	9.97	10.25	11.73
	12H	12.82	13.07	13.94	14.17	15.69	8.97	9.22	10.09	10.33	11.84
12H	4H	11.85	12.21	12.95	13.30	14.77	8.15	8.50	9.25	9.60	11.07
	6H	12.44	12.73	13.56	13.84	15.32	8.71	9.00	9.83	10.10	11.58
	8H	12.66	12.91	13.78	14.02	15.53	8.92	9.17	10.04	10.27	11.79