

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: P927110

Luminaire Tested: DFN2DIP-HX4F0-100D090US830-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927110
REPORT IS A COMBINATION OF REPORTS P900922 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D090US830-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

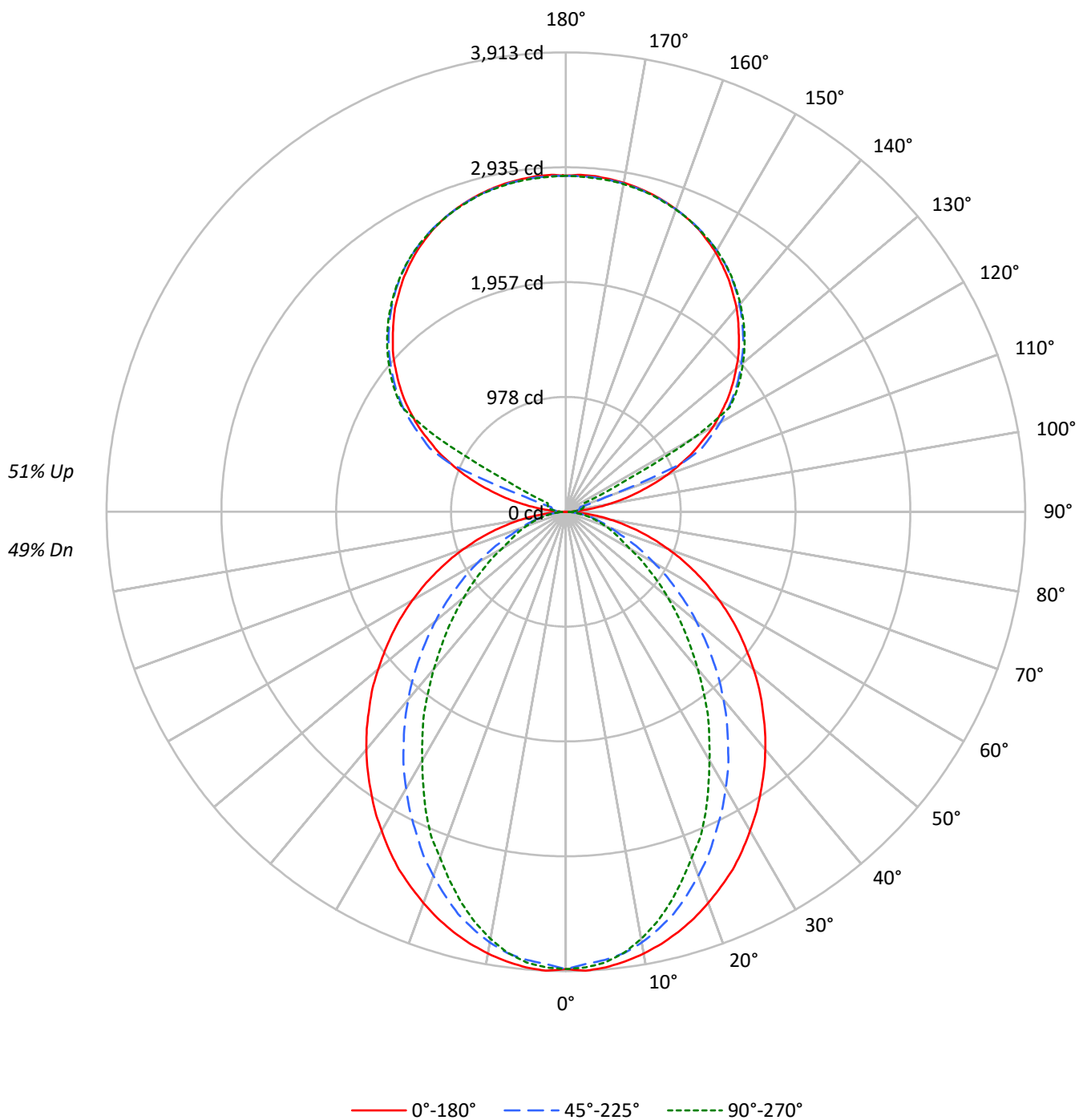
Lumens per Lamp: N/A
Luminaire Lumens: 16408.9 lumens
Efficiency: N/A
Efficacy: 98.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 167.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
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	107	107	107	107	98	98	98	98	83	83	83	68	68	68	55	55	55
1	98	94	90	87	90	87	83	81	73	71	69	61	59	58	49	48	47
2	90	83	77	72	82	76	71	67	65	61	58	54	51	49	44	42	41
3	82	73	66	60	75	68	61	56	57	53	49	48	45	42	39	37	35
4	75	65	57	51	69	60	53	48	51	46	42	43	39	36	36	33	31
5	69	58	50	44	64	54	47	42	46	41	37	39	35	32	32	29	27
6	64	52	44	39	59	49	42	37	42	36	32	35	31	28	29	26	24
7	59	47	40	34	55	44	37	32	38	33	29	32	28	25	27	24	22
8	55	43	35	30	51	40	33	29	35	29	26	30	26	22	25	22	19
9	51	39	32	27	47	37	30	26	32	27	23	27	23	20	23	20	18
10	48	36	29	24	44	34	28	23	30	24	21	25	21	18	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2896	2896	2896
5°	2901	2851	2869
10°	2873	2795	2776
15°	2834	2703	2631
20°	2781	2576	2454
25°	2728	2433	2284
30°	2656	2287	2067
35°	2586	2130	1876
40°	2515	1968	1658
45°	2432	1787	1460
50°	2346	1605	1267
55°	2256	1410	1081
60°	2153	1206	890
65°	2033	999	801
70°	1889	806	725
75°	1707	711	660
80°	1444	598	573
85°	1010	400	431

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2432 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	365.1	2.2
10°-20°	1002.2	6.1
20°-30°	1407.1	8.6
30°-40°	1533.8	9.3
40°-50°	1409.7	8.6
50°-60°	1107.1	6.7
60°-70°	720.6	4.4
70°-80°	370.9	2.3
80°-90°	99.7	0.6
90°-100°	94.4	0.6
100°-110°	351.9	2.1
110°-120°	933.3	5.7
120°-130°	1547.9	9.4
130°-140°	1644.2	10.0
140°-150°	1528.2	9.3
150°-160°	1228.6	7.5
160°-170°	791.7	4.8
170°-180°	272.5	1.7
0°-30°	2774.3	16.9
0°-40°	4308.1	26.3
0°-60°	6825.0	41.6
0°-90°	8016.3	48.9
90°-120°	1379.6	8.4
90°-150°	6099.9	37.2
90°-180°	8393.0	51.1
0°-180°	16408.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3895	3895	3895	3895	3895	
5°	3895	3878	3832	3864	3853	369
15°	3705	3666	3546	3479	3444	1044
25°	3363	3250	3018	2873	2820	1547
35°	2898	2718	2408	2186	2108	1814
45°	2369	2133	1763	1512	1428	1829
55°	1801	1526	1146	934	867	1610
65°	1216	930	613	494	483	1206
75°	648	402	282	257	254	686
85°	152	77	67	67	67	174
90°	2	25	41	52	56	15
95°	135	66	81	91	89	159
105°	630	692	126	149	157	673
115°	1191	1226	1278	319	170	1173
125°	1684	1711	1750	1765	1771	1502
135°	2084	2117	2136	2156	2152	1610
145°	2418	2415	2450	2465	2455	1512
155°	2662	2643	2668	2680	2664	1227
165°	2805	2792	2799	2813	2799	792
175°	2869	2854	2859	2873	2852	273
180°	2863	2863	2863	2863	2863	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3895.4	3895.4	3895.4	3895.4	3895.4
2.5°	3912.9	3895.4	3856.4	3892.0	3884.9
5°	3895.4	3877.7	3831.7	3863.6	3853.0
7.5°	3863.6	3842.6	3793.2	3807.0	3789.5
10°	3821.3	3796.6	3726.3	3715.4	3694.5
12.5°	3768.6	3736.7	3641.3	3620.4	3581.5
15°	3705.0	3666.0	3546.3	3479.4	3444.3
17.5°	3630.9	3574.4	3426.4	3348.9	3292.4
20°	3546.3	3475.7	3299.5	3211.7	3133.8
22.5°	3454.7	3373.6	3169.0	3049.4	2996.6
25°	3363.1	3250.2	3017.5	2873.1	2820.1
27.5°	3253.9	3133.8	2876.5	2710.8	2629.7
30°	3137.6	3003.3	2721.3	2541.8	2446.4
32.5°	3024.7	2862.3	2573.6	2361.9	2273.6
35°	2897.8	2718.0	2407.9	2185.8	2107.9
37.5°	2774.4	2580.3	2252.7	2009.2	1921.3
40°	2643.9	2432.6	2090.4	1840.1	1748.5
42.5°	2510.0	2284.4	1928.4	1667.4	1579.4
45°	2369.0	2132.6	1762.8	1512.1	1427.6
47.5°	2235.1	1984.9	1604.1	1353.5	1276.1
50°	2087.0	1836.7	1448.9	1205.5	1131.8
52.5°	1942.2	1677.8	1300.8	1068.1	1001.2
55°	1801.2	1526.4	1145.6	934.3	867.3
57.5°	1656.9	1374.8	1008.4	810.8	754.4
60°	1508.8	1226.8	863.6	684.1	627.6
62.5°	1364.4	1082.4	740.1	571.2	543.1
65°	1216.3	930.5	613.4	493.7	482.8
67.5°	1075.3	789.5	493.7	433.5	423.0
70°	927.1	652.3	408.8	373.6	359.5
72.5°	786.1	525.1	341.8	313.8	306.7
75°	648.5	401.7	282.0	257.3	253.9
77.5°	511.3	285.4	222.1	207.9	200.8
80°	384.1	204.6	169.1	155.2	155.2
82.5°	267.8	137.6	116.3	109.2	109.2
85°	151.5	77.4	66.9	66.9	66.9
87.5°	56.5	28.1	28.1	24.7	24.7
90°	2.0	24.9	41.3	51.9	55.8
92.5°	51.9	43.5	49.7	53.9	55.8
95°	134.6	66.2	80.7	91.2	89.1
97.5°	242.3	72.6	105.6	111.9	113.9
100°	366.7	82.9	118.1	134.6	138.7
102.5°	503.3	499.3	122.2	144.9	151.3
105°	629.7	692.0	126.4	149.1	157.4
107.5°	776.8	828.5	130.6	153.3	161.6
110°	917.7	961.1	362.6	155.4	163.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1050.3	1087.5	1052.3	159.4	165.8
115°	1191.0	1226.2	1278.1	319.0	169.9
117.5°	1313.3	1354.7	1390.0	1093.7	551.0
120°	1450.0	1481.0	1518.5	1543.2	1263.6
122.5°	1566.0	1599.1	1640.7	1653.0	1655.2
125°	1684.0	1711.0	1750.4	1764.9	1771.1
127.5°	1791.7	1820.7	1852.0	1872.7	1874.6
130°	1893.3	1926.6	1949.2	1972.0	1970.1
132.5°	1996.9	2023.9	2046.5	2065.3	2063.3
135°	2084.0	2117.1	2135.6	2156.5	2152.4
137.5°	2175.0	2199.8	2220.7	2241.4	2235.2
140°	2264.0	2280.8	2303.4	2322.0	2311.8
142.5°	2338.8	2353.3	2380.1	2396.6	2386.3
145°	2417.5	2415.3	2450.5	2465.0	2454.6
147.5°	2485.7	2479.5	2514.7	2525.1	2516.9
150°	2552.1	2537.6	2570.8	2583.0	2572.7
152.5°	2607.9	2591.4	2622.4	2634.9	2620.4
155°	2661.8	2643.3	2668.1	2680.5	2664.0
157.5°	2705.4	2688.9	2707.5	2722.0	2705.4
160°	2742.7	2730.1	2742.7	2755.0	2740.5
162.5°	2775.7	2763.3	2773.7	2788.2	2769.5
165°	2804.7	2792.3	2798.6	2813.1	2798.6
167.5°	2827.6	2815.1	2821.4	2835.9	2817.2
170°	2846.3	2833.7	2837.9	2852.4	2833.7
172.5°	2858.6	2846.3	2850.4	2864.9	2846.3
175°	2868.9	2854.4	2858.6	2873.0	2852.4
177.5°	2873.0	2858.6	2860.8	2875.3	2856.6
180°	2862.7	2862.7	2862.7	2862.7	2862.7

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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	10.73	11.56	11.71	12.54	13.83	6.71	7.53	7.68	8.51	9.80
	3H	12.41	13.15	13.40	14.14	15.45	7.90	8.63	8.88	9.62	10.94
	4H	13.02	13.71	14.02	14.71	16.03	8.35	9.04	9.35	10.04	11.36
	6H	13.44	14.08	14.45	15.08	16.41	8.67	9.31	9.68	10.31	11.64
	8H	13.57	14.18	14.58	15.19	16.52	8.76	9.37	9.78	10.39	11.71
	12H	13.63	14.21	14.65	15.22	16.57	8.81	9.38	9.82	10.39	11.75
4H	2H	10.75	11.45	11.76	12.44	13.76	7.30	8.00	8.31	8.99	10.31
	3H	12.58	13.16	13.59	14.18	15.52	8.65	9.23	9.67	10.25	11.59
	4H	13.27	13.80	14.29	14.82	16.18	9.20	9.73	10.22	10.75	12.10
	6H	13.79	14.24	14.82	15.28	16.64	9.62	10.08	10.65	11.12	12.47
	8H	13.97	14.39	15.00	15.42	16.79	9.75	10.18	10.79	11.21	12.58
	12H	14.06	14.44	15.11	15.49	16.86	9.82	10.20	10.87	11.25	12.62
8H	4H	13.24	13.66	14.27	14.70	16.07	9.48	9.91	10.51	10.94	12.31
	6H	13.81	14.16	14.86	15.23	16.60	10.00	10.35	11.06	11.43	12.79
	8H	14.03	14.33	15.09	15.39	16.78	10.20	10.50	11.26	11.56	12.95
	12H	14.16	14.43	15.23	15.49	16.92	10.32	10.59	11.38	11.64	13.07
12H	4H	13.19	13.57	14.24	14.62	16.00	9.49	9.87	10.54	10.92	12.29
	6H	13.78	14.09	14.85	15.15	16.54	10.05	10.36	11.12	11.42	12.80
	8H	14.01	14.28	15.07	15.33	16.76	10.26	10.53	11.33	11.59	13.02