

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: P928696

Luminaire Tested: DFN2DIP-HX4F0-090D100US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928696
REPORT IS A COMBINATION OF REPORTS P900937 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D100US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

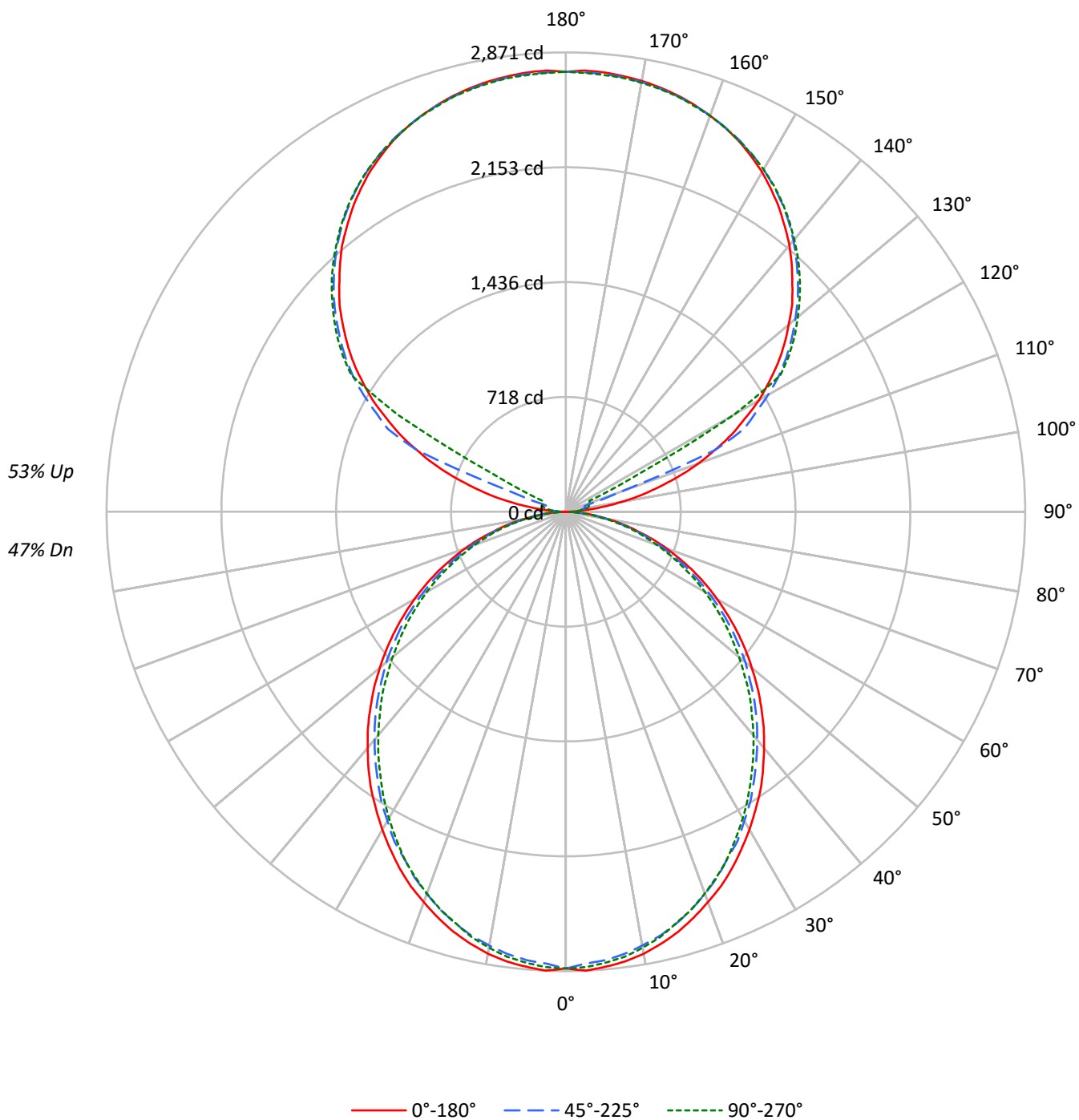
Lumens per Lamp: N/A
Luminaire Lumens: 15330.2 lumens
Efficiency: N/A
Efficacy: 93.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 164.8
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	107	107	107	107	98	98	98	98	82	82	82	67	67	67	54	54	54
1	97	93	89	86	89	86	82	79	72	69	67	59	57	56	47	46	45
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	38
3	81	71	64	58	74	66	59	54	55	51	47	46	42	40	37	35	33
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	30	28
5	68	56	48	42	62	52	45	40	44	39	34	37	33	29	30	27	24
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22
7	58	45	38	32	53	42	35	30	36	30	26	30	26	23	25	22	19
8	54	41	34	28	49	38	31	27	33	27	23	28	23	20	23	20	17
9	50	38	30	25	46	35	28	24	30	25	21	25	21	18	21	18	15
10	47	35	27	23	43	32	26	21	28	22	19	23	19	16	19	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2122	2122	2122
5°	2126	2093	2107
10°	2109	2065	2078
15°	2078	2031	2034
20°	2036	1984	1988
25°	1995	1928	1936
30°	1943	1875	1869
35°	1893	1814	1798
40°	1833	1751	1731
45°	1772	1689	1662
50°	1706	1623	1582
55°	1637	1547	1508
60°	1558	1457	1424
65°	1473	1364	1325
70°	1364	1250	1218
75°	1214	1114	1120
80°	1033	941	932
85°	749	641	620

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1772 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	268.6	1.8
10°-20°	755.8	4.9
20°-30°	1110.7	7.2
30°-40°	1290.1	8.4
40°-50°	1288.5	8.4
50°-60°	1123.5	7.3
60°-70°	830.5	5.4
70°-80°	469.9	3.1
80°-90°	128.9	0.8
90°-100°	90.7	0.6
100°-110°	338.1	2.2
110°-120°	896.7	5.8
120°-130°	1487.3	9.7
130°-140°	1579.8	10.3
140°-150°	1468.3	9.6
150°-160°	1180.4	7.7
160°-170°	760.6	5.0
170°-180°	261.8	1.7
0°-30°	2135.2	13.9
0°-40°	3425.3	22.3
0°-60°	5837.3	38.1
0°-90°	7266.5	47.4
90°-120°	1325.5	8.6
90°-150°	5860.8	38.2
90°-180°	8064.0	52.6
0°-180°	15330.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2854	2854	2854	2854	2854	
5°	2854	2843	2813	2835	2830	271
15°	2717	2701	2665	2676	2662	765
25°	2459	2437	2391	2396	2391	1131
35°	2122	2094	2050	2034	2020	1325
45°	1726	1707	1666	1636	1625	1332
55°	1306	1290	1257	1224	1210	1168
65°	881	864	837	812	799	871
75°	461	456	442	425	431	492
85°	112	110	107	99	96	125
90°	2	24	40	50	54	14
95°	129	64	78	88	86	153
105°	605	665	122	143	151	646
115°	1144	1178	1228	306	163	1127
125°	1618	1644	1682	1696	1702	1443
135°	2002	2034	2052	2072	2068	1547
145°	2323	2321	2354	2368	2358	1453
155°	2558	2540	2564	2575	2560	1178
165°	2695	2683	2689	2703	2689	761
175°	2756	2742	2746	2760	2741	262
180°	2750	2750	2750	2750	2750	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2854.0	2854.0	2854.0	2854.0	2854.0
2.5°	2870.7	2857.0	2826.7	2854.0	2848.8
5°	2854.0	2843.3	2813.1	2834.9	2829.6
7.5°	2834.9	2818.6	2788.3	2810.4	2804.9
10°	2804.9	2785.7	2752.7	2774.6	2766.4
12.5°	2763.5	2747.2	2714.4	2728.0	2722.5
15°	2717.0	2700.7	2664.8	2675.9	2662.2
17.5°	2659.3	2643.0	2607.2	2620.9	2607.2
20°	2596.1	2579.8	2541.3	2549.5	2538.7
22.5°	2533.2	2508.5	2472.6	2472.6	2467.1
25°	2458.9	2437.1	2390.6	2395.8	2390.6
27.5°	2376.5	2357.3	2321.9	2313.7	2300.0
30°	2294.5	2272.3	2231.2	2223.1	2212.1
32.5°	2206.5	2190.2	2146.2	2129.7	2118.6
35°	2121.5	2094.1	2050.1	2033.6	2019.9
37.5°	2025.4	2000.7	1956.7	1937.5	1923.8
40°	1926.7	1904.6	1860.6	1836.1	1825.1
42.5°	1830.6	1808.5	1764.8	1737.2	1720.9
45°	1726.3	1707.2	1665.8	1635.8	1624.8
47.5°	1624.8	1605.6	1561.5	1531.3	1515.0
50°	1517.6	1503.9	1465.5	1427.1	1413.4
52.5°	1413.4	1394.1	1358.6	1328.4	1309.1
55°	1306.5	1289.9	1257.0	1224.1	1210.4
57.5°	1199.4	1185.7	1149.9	1117.0	1105.9
60°	1092.2	1081.4	1043.0	1012.7	1004.6
62.5°	987.9	968.7	941.3	914.0	902.9
65°	881.1	864.5	837.1	812.4	798.7
67.5°	771.3	757.4	732.8	713.7	702.6
70°	669.7	658.6	633.9	614.7	603.9
72.5°	565.4	554.4	540.7	521.5	513.4
75°	461.0	455.7	441.7	425.4	431.0
77.5°	367.7	356.7	351.2	343.0	334.9
80°	274.6	271.6	266.1	257.9	252.5
82.5°	186.6	186.6	184.0	172.9	172.9
85°	112.4	109.8	107.2	98.7	96.1
87.5°	49.5	43.9	38.5	30.3	27.4
90°	1.9	23.9	39.7	49.9	53.6
92.5°	49.9	41.8	47.8	51.8	53.6
95°	129.3	63.6	77.5	87.7	85.6
97.5°	232.8	69.7	101.4	107.5	109.5
100°	352.4	79.6	113.4	129.3	133.3
102.5°	483.5	479.8	117.4	139.2	145.3
105°	605.1	664.8	121.5	143.2	151.3
107.5°	746.4	796.0	125.5	147.3	155.3
110°	881.7	923.4	348.3	149.4	157.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1009.1	1044.8	1011.1	153.1	159.3
115°	1144.3	1178.2	1228.0	306.5	163.3
117.5°	1261.8	1301.6	1335.5	1050.8	529.4
120°	1393.2	1423.0	1458.9	1482.8	1214.1
122.5°	1504.6	1536.4	1576.4	1588.2	1590.3
125°	1618.0	1644.0	1681.8	1695.8	1701.6
127.5°	1721.5	1749.4	1779.4	1799.3	1801.2
130°	1819.1	1851.0	1872.8	1894.7	1892.8
132.5°	1918.6	1944.6	1966.4	1984.3	1982.4
135°	2002.3	2034.2	2051.9	2072.0	2068.0
137.5°	2089.7	2113.6	2133.7	2153.6	2147.6
140°	2175.2	2191.4	2213.1	2231.1	2221.1
142.5°	2247.1	2261.1	2286.8	2302.6	2292.8
145°	2322.8	2320.6	2354.5	2368.4	2358.4
147.5°	2388.2	2382.3	2416.1	2426.0	2418.3
150°	2452.0	2438.1	2470.0	2481.8	2471.9
152.5°	2505.6	2489.8	2519.7	2531.6	2517.7
155°	2557.5	2539.7	2563.6	2575.4	2559.6
157.5°	2599.3	2583.5	2601.4	2615.3	2599.3
160°	2635.2	2623.2	2635.2	2647.0	2633.1
162.5°	2666.8	2655.0	2665.0	2678.9	2661.0
165°	2694.7	2682.9	2688.8	2702.8	2688.8
167.5°	2716.7	2704.7	2710.9	2724.8	2706.8
170°	2734.7	2722.7	2726.7	2740.6	2722.7
172.5°	2746.5	2734.7	2738.7	2752.7	2734.7
175°	2756.4	2742.5	2746.5	2760.5	2740.6
177.5°	2760.5	2746.5	2748.7	2762.6	2744.6
180°	2750.5	2750.5	2750.5	2750.5	2750.5

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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	9.64	10.48	10.62	11.47	12.78	9.21	10.05	10.19	11.04	12.35
	3H	11.30	12.05	12.29	13.05	14.38	10.83	11.58	11.82	12.58	13.91
	4H	11.89	12.60	12.89	13.61	14.94	11.41	12.13	12.42	13.13	14.47
	6H	12.29	12.94	13.30	13.95	15.30	11.81	12.47	12.83	13.48	14.83
	8H	12.39	13.02	13.41	14.04	15.39	11.92	12.54	12.94	13.57	14.91
	12H	12.44	13.03	13.46	14.05	15.42	11.96	12.55	12.98	13.57	14.94
4H	2H	10.10	10.81	11.11	11.82	13.16	9.76	10.47	10.77	11.47	12.81
	3H	11.97	12.56	12.98	13.59	14.94	11.57	12.17	12.59	13.20	14.55
	4H	12.68	13.22	13.71	14.25	15.62	12.27	12.82	13.30	13.84	15.22
	6H	13.20	13.66	14.23	14.71	16.08	12.79	13.25	13.82	14.30	15.67
	8H	13.34	13.78	14.38	14.82	16.21	12.93	13.37	13.97	14.41	15.80
	12H	13.42	13.81	14.47	14.87	16.26	12.99	13.39	14.05	14.45	15.84
8H	4H	12.88	13.31	13.91	14.35	15.74	12.52	12.95	13.55	13.99	15.38
	6H	13.51	13.87	14.57	14.95	16.34	13.14	13.51	14.21	14.59	15.97
	8H	13.73	14.05	14.80	15.11	16.52	13.36	13.68	14.43	14.75	16.15
	12H	13.86	14.14	14.93	15.20	16.65	13.48	13.75	14.55	14.82	16.26
12H	4H	12.86	13.26	13.92	14.31	15.70	12.51	12.90	13.56	13.96	15.35
	6H	13.54	13.86	14.61	14.92	16.33	13.19	13.50	14.25	14.57	15.97
	8H	13.78	14.06	14.85	15.12	16.57	13.42	13.70	14.49	14.76	16.21