

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: P928700

Luminaire Tested: DFN2DIP-HX4F0-090D110US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928700
REPORT IS A COMBINATION OF REPORTS P900955 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D110US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

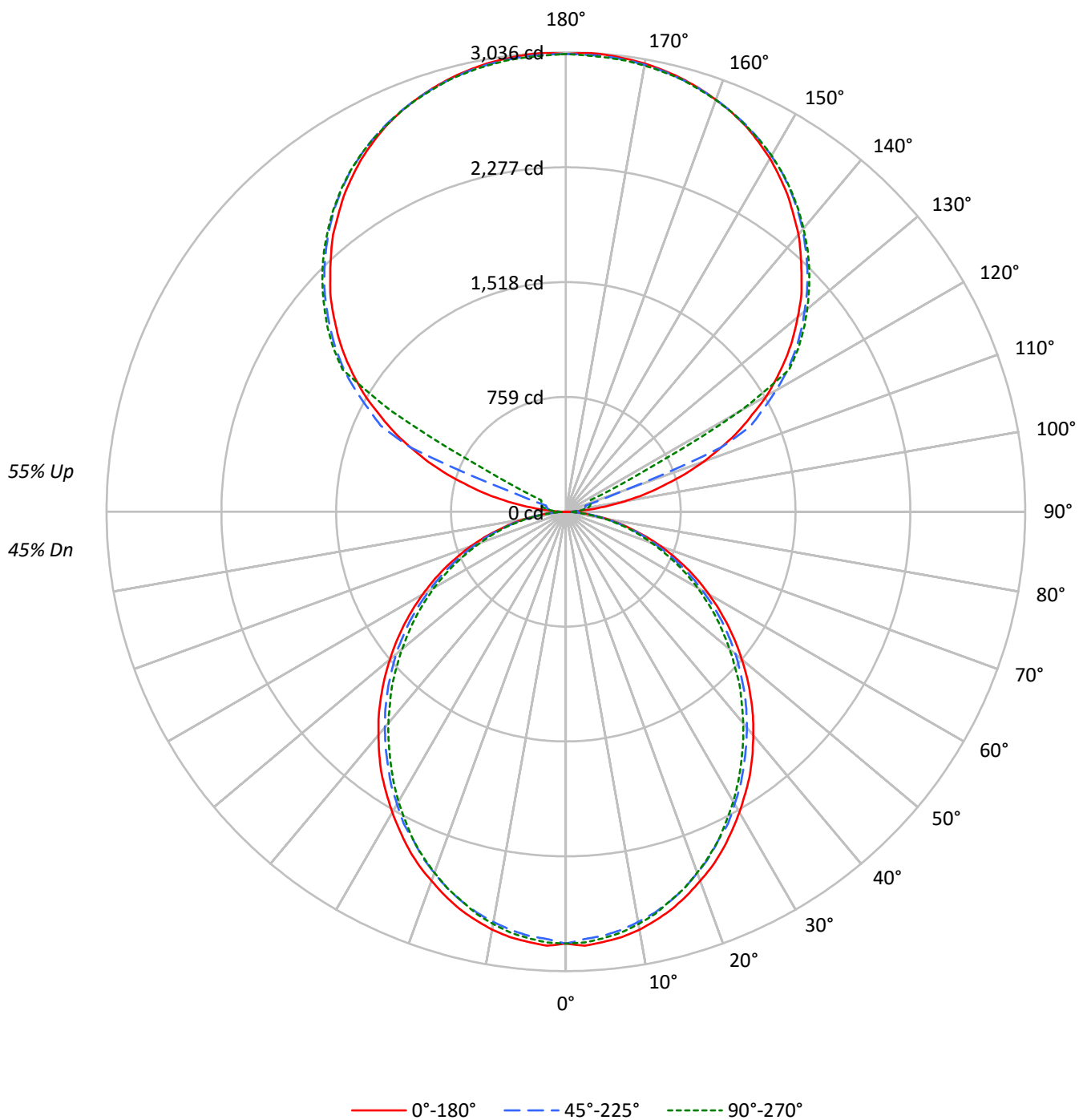
Lumens per Lamp: N/A
Luminaire Lumens: 16137.0 lumens
Efficiency: N/A
Efficacy: 91.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 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

TEST NUMBER: P928700

CATALOG NUMBER: DFN2DIP-HX4F0-090D110US930-FLLONL

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	106	106	106	106	97	97	97	97	81	81	81	65	65	65	52	52	52
1	97	92	89	85	88	85	82	79	71	68	66	58	56	54	46	45	44
2	88	81	75	69	80	74	69	64	62	58	55	51	48	45	40	38	37
3	80	71	64	58	73	65	59	54	55	50	46	45	41	38	36	33	31
4	73	63	55	49	67	58	51	46	48	43	39	40	36	33	32	29	27
5	67	56	48	42	61	52	44	39	43	38	34	36	32	29	29	26	23
6	62	50	42	36	57	46	39	34	39	34	29	32	28	25	26	23	21
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	24	21	18
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	16
9	50	37	30	25	45	35	28	23	30	24	21	25	21	18	20	17	15
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	19	16	13

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

TEST NUMBER: P928700

CATALOG NUMBER: DFN2DIP-HX4F0-090D110US930-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	268.6	1.7
10°-20°	755.8	4.7
20°-30°	1110.7	6.9
30°-40°	1290.1	8.0
40°-50°	1288.5	8.0
50°-60°	1123.5	7.0
60°-70°	830.5	5.1
70°-80°	469.9	2.9
80°-90°	129.3	0.8
90°-100°	99.8	0.6
100°-110°	371.9	2.3
110°-120°	986.4	6.1
120°-130°	1636.0	10.1
130°-140°	1737.8	10.8
140°-150°	1615.1	10.0
150°-160°	1298.5	8.0
160°-170°	836.7	5.2
170°-180°	288.0	1.8
0°-30°	2135.2	13.2
0°-40°	3425.3	21.2
0°-60°	5837.3	36.2
0°-90°	7267.0	45.0
90°-120°	1458.0	9.0
90°-150°	6446.8	40.0
90°-180°	8870.0	55.0
0°-180°	16137.0	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	26	44	55	59	15
95°	142	70	85	96	94	168
105°	666	731	134	158	166	711
115°	1259	1296	1351	337	180	1239
125°	1780	1808	1850	1865	1872	1587
135°	2202	2238	2257	2279	2275	1701
145°	2555	2553	2590	2605	2594	1598
155°	2813	2794	2820	2833	2816	1296
165°	2964	2951	2958	2973	2958	837
175°	3032	3017	3021	3036	3015	289
180°	3026	3026	3026	3026	3026	

TEST NUMBER: P928700

CATALOG NUMBER: DFN2DIP-HX4F0-090D110US930-FLLONL

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°	2.1	26.2	43.7	54.8	59.0
92.5°	54.8	46.0	52.5	57.0	59.0
95°	142.2	69.9	85.2	96.4	94.1
97.5°	256.1	76.7	111.5	118.3	120.4
100°	387.6	87.6	124.8	142.2	146.6
102.5°	531.9	527.7	129.2	153.1	159.9
105°	665.5	731.3	133.7	157.5	166.4
107.5°	821.0	875.6	138.1	161.9	170.8
110°	969.9	1015.7	383.2	164.3	172.9

TEST NUMBER: P928700

CATALOG NUMBER: DFN2DIP-HX4F0-090D110US930-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1110.1	1149.3	1112.1	168.5	175.2
115°	1258.8	1295.9	1350.9	337.2	179.6
117.5°	1388.0	1431.7	1469.1	1155.8	582.3
120°	1532.5	1565.3	1604.8	1631.1	1335.5
122.5°	1655.0	1690.1	1734.0	1747.0	1749.4
125°	1779.8	1808.4	1850.0	1865.3	1871.8
127.5°	1893.7	1924.3	1957.3	1979.1	1981.3
130°	2001.0	2036.1	2060.0	2084.2	2082.2
132.5°	2110.4	2139.0	2163.0	2182.7	2180.7
135°	2202.5	2237.6	2257.1	2279.2	2274.7
137.5°	2298.7	2325.0	2347.0	2368.9	2362.4
140°	2392.8	2410.4	2434.4	2454.1	2443.2
142.5°	2471.8	2487.1	2515.5	2532.9	2522.0
145°	2555.0	2552.7	2589.8	2605.2	2594.3
147.5°	2627.1	2620.6	2657.7	2668.6	2660.1
150°	2697.2	2681.9	2717.0	2730.0	2719.1
152.5°	2756.2	2738.8	2771.6	2784.9	2769.5
155°	2813.2	2793.7	2819.9	2832.9	2815.5
157.5°	2859.2	2841.7	2861.5	2876.9	2859.2
160°	2898.7	2885.4	2898.7	2911.7	2896.3
162.5°	2933.5	2920.6	2931.5	2946.8	2927.1
165°	2964.2	2951.2	2957.7	2973.0	2957.7
167.5°	2988.4	2975.2	2981.9	2997.2	2977.5
170°	3008.2	2994.9	2999.3	3014.7	2994.9
172.5°	3021.1	3008.2	3012.6	3027.9	3008.2
175°	3032.0	3016.7	3021.1	3036.5	3014.7
177.5°	3036.5	3021.1	3023.5	3038.8	3019.1
180°	3025.6	3025.6	3025.6	3025.6	3025.6

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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	9.41	10.23	10.41	11.24	12.58	8.98	9.80	9.98	10.81	12.15
	3H	11.07	11.80	12.08	12.82	14.18	10.60	11.33	11.60	12.35	13.71
	4H	11.65	12.35	12.68	13.37	14.74	11.18	11.88	12.20	12.90	14.27
	6H	12.05	12.69	13.08	13.72	15.10	11.58	12.22	12.61	13.24	14.62
	8H	12.16	12.77	13.19	13.81	15.19	11.68	12.29	12.72	13.33	14.71
	12H	12.20	12.78	13.25	13.82	15.22	11.72	12.30	12.77	13.34	14.74
4H	2H	9.87	10.56	10.90	11.58	12.95	9.52	10.22	10.55	11.24	12.61
	3H	11.73	12.31	12.77	13.36	14.74	11.34	11.92	12.37	12.97	14.35
	4H	12.44	12.97	13.49	14.02	15.42	12.04	12.57	13.08	13.61	15.02
	6H	12.96	13.41	14.01	14.48	15.88	12.55	13.00	13.60	14.07	15.47
	8H	13.11	13.53	14.16	14.59	16.01	12.69	13.12	13.75	14.18	15.59
	12H	13.18	13.56	14.25	14.64	16.06	12.76	13.14	13.83	14.21	15.63
8H	4H	12.64	13.06	13.69	14.12	15.54	12.28	12.70	13.33	13.76	15.18
	6H	13.27	13.62	14.35	14.72	16.13	12.91	13.26	13.98	14.36	15.77
	8H	13.49	13.80	14.57	14.88	16.31	13.12	13.43	14.20	14.51	15.94
	12H	13.62	13.89	14.71	14.97	16.44	13.23	13.51	14.32	14.59	16.06
12H	4H	12.62	13.01	13.69	14.08	15.50	12.27	12.65	13.34	13.73	15.15
	6H	13.30	13.61	14.38	14.69	16.12	12.95	13.26	14.03	14.34	15.77
	8H	13.54	13.81	14.63	14.89	16.36	13.18	13.45	14.27	14.53	16.00