

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: P928704

Luminaire Tested: DFN2DIP-HX4F0-090D120US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928704
REPORT IS A COMBINATION OF REPORTS P900973 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D120US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

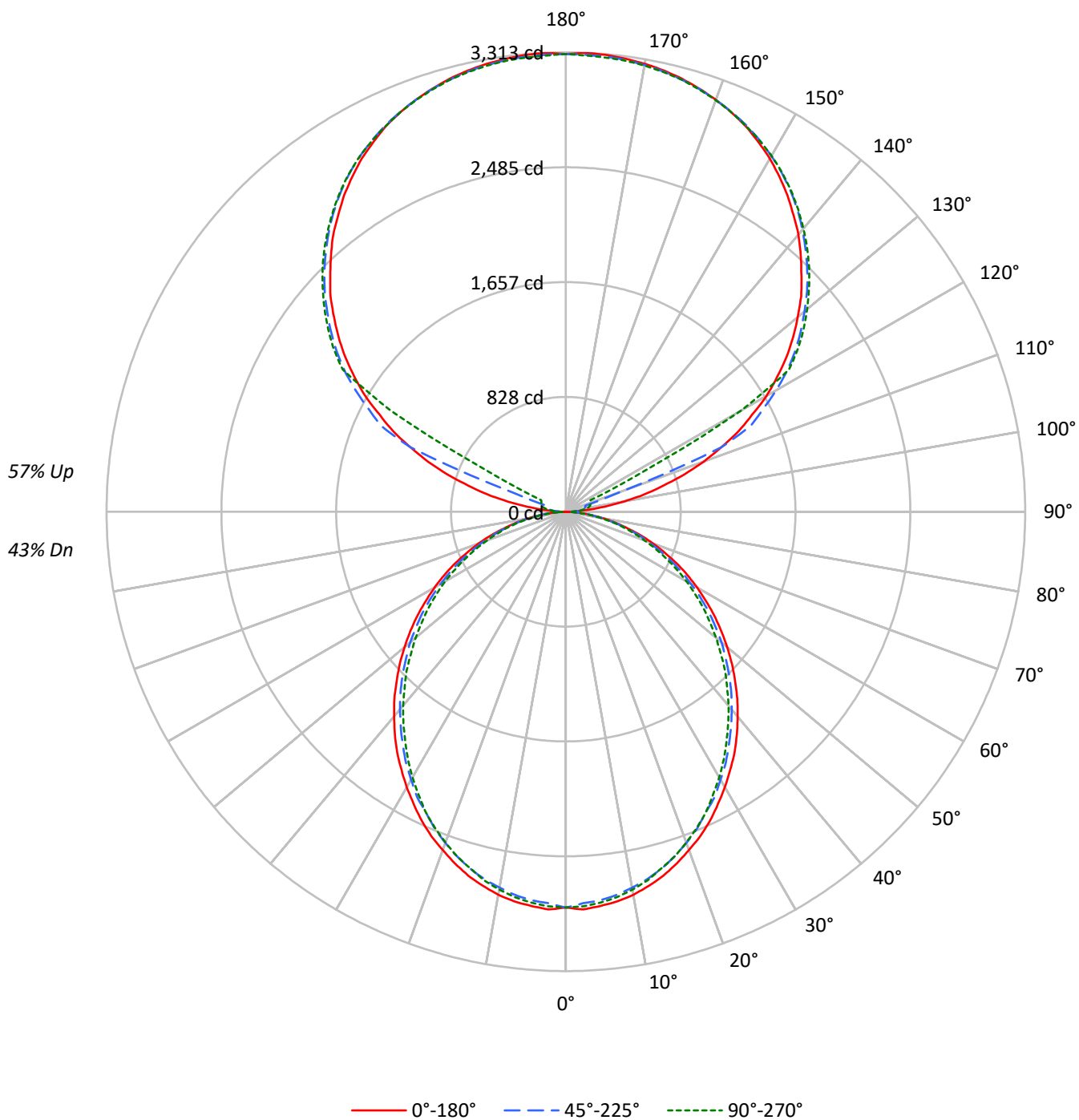
Lumens per Lamp: N/A
Luminaire Lumens: 16943.9 lumens
Efficiency: N/A
Efficacy: 91.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 184.6
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	79	79	79	64	64	64	50	50	50
1	96	92	88	85	88	84	81	78	70	67	65	56	55	53	44	43	42
2	88	80	74	69	80	74	68	64	61	57	54	49	47	44	39	37	35
3	80	71	63	58	73	65	58	53	54	49	45	44	40	38	34	32	30
4	73	62	55	49	66	57	50	45	48	43	39	39	35	32	31	28	26
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23
6	62	50	42	36	56	46	39	34	38	33	29	31	27	24	25	22	20
7	57	45	37	32	52	41	34	29	35	29	25	29	25	22	23	20	18
8	53	41	33	28	48	38	31	26	32	26	23	26	22	19	21	18	16
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	27	22	18	22	18	16	18	15	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

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	268.6	1.6
10°-20°	755.8	4.5
20°-30°	1110.7	6.6
30°-40°	1290.1	7.6
40°-50°	1288.5	7.6
50°-60°	1123.5	6.6
60°-70°	830.5	4.9
70°-80°	469.9	2.8
80°-90°	129.8	0.8
90°-100°	108.8	0.6
100°-110°	405.7	2.4
110°-120°	1076.0	6.4
120°-130°	1784.7	10.5
130°-140°	1895.8	11.2
140°-150°	1761.9	10.4
150°-160°	1416.5	8.4
160°-170°	912.8	5.4
170°-180°	314.2	1.9
0°-30°	2135.2	12.6
0°-40°	3425.3	20.2
0°-60°	5837.3	34.5
0°-90°	7267.5	42.9
90°-120°	1590.6	9.4
90°-150°	7033.0	41.5
90°-180°	9676.0	57.1
0°-180°	16943.9	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	29	48	60	64	16
95°	155	76	93	105	103	184
105°	726	798	146	172	182	776
115°	1373	1414	1474	368	196	1352
125°	1942	1973	2018	2035	2042	1732
135°	2403	2441	2462	2486	2482	1856
145°	2787	2785	2825	2842	2830	1743
155°	3069	3048	3076	3090	3072	1414
165°	3234	3220	3227	3243	3227	914
175°	3308	3291	3296	3313	3289	315
180°	3301	3301	3301	3301	3301	

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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°	2.3	28.6	47.7	59.8	64.4
92.5°	59.8	50.2	57.3	62.1	64.4
95°	155.1	76.3	93.0	105.2	102.7
97.5°	279.4	83.7	121.7	129.0	131.3
100°	422.8	95.6	136.1	155.1	160.0
102.5°	580.3	575.7	140.9	167.1	174.4
105°	726.0	797.8	145.8	171.9	181.5
107.5°	895.6	955.2	150.6	176.7	186.3
110°	1058.1	1108.1	418.0	179.2	188.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1211.0	1253.8	1213.3	183.8	191.1
115°	1373.2	1413.8	1473.6	367.8	196.0
117.5°	1514.2	1561.9	1602.7	1260.9	635.3
120°	1671.9	1707.6	1750.7	1779.4	1456.9
122.5°	1805.5	1843.8	1891.7	1905.9	1908.4
125°	1941.6	1972.8	2018.2	2034.9	2042.0
127.5°	2065.8	2099.3	2135.3	2159.1	2161.4
130°	2182.9	2221.2	2247.3	2273.7	2271.4
132.5°	2302.3	2333.5	2359.6	2381.2	2378.9
135°	2402.7	2441.0	2462.3	2486.4	2481.6
137.5°	2507.7	2536.3	2560.4	2584.2	2577.1
140°	2610.4	2629.6	2655.7	2677.3	2665.4
142.5°	2696.5	2713.3	2744.2	2763.2	2751.3
145°	2787.3	2784.8	2825.3	2842.1	2830.1
147.5°	2865.9	2858.8	2899.4	2911.3	2901.9
150°	2942.4	2925.7	2964.0	2978.2	2966.3
152.5°	3006.8	2987.8	3023.6	3038.0	3021.3
155°	3068.9	3047.6	3076.3	3090.5	3071.5
157.5°	3119.1	3100.1	3121.7	3138.4	3119.1
160°	3162.2	3147.8	3162.2	3176.4	3159.7
162.5°	3200.3	3186.1	3198.0	3214.7	3193.2
165°	3233.7	3219.5	3226.6	3243.4	3226.6
167.5°	3260.1	3245.6	3253.0	3269.7	3248.2
170°	3281.6	3267.2	3272.0	3288.7	3267.2
172.5°	3295.8	3281.6	3286.5	3303.2	3281.6
175°	3307.7	3291.0	3295.8	3312.6	3288.7
177.5°	3312.6	3295.8	3298.4	3315.1	3293.6
180°	3300.7	3300.7	3300.7	3300.7	3300.7

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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	9.19	9.99	10.21	11.02	12.39	8.76	9.56	9.78	10.59	11.96
	3H	10.85	11.57	11.88	12.60	13.99	10.38	11.09	11.40	12.13	13.52
	4H	11.43	12.11	12.47	13.15	14.55	10.96	11.64	12.00	12.68	14.07
	6H	11.83	12.46	12.88	13.50	14.91	11.36	11.98	12.40	13.02	14.43
	8H	11.94	12.53	12.99	13.59	14.99	11.46	12.06	12.51	13.11	14.52
	12H	11.98	12.55	13.04	13.60	15.03	11.50	12.07	12.56	13.12	14.55
4H	2H	9.65	10.33	10.69	11.36	12.76	9.30	9.98	10.35	11.02	12.42
	3H	11.51	12.08	12.56	13.14	14.55	11.12	11.68	12.17	12.75	14.16
	4H	12.22	12.74	13.28	13.80	15.23	11.82	12.34	12.88	13.39	14.82
	6H	12.73	13.18	13.80	14.26	15.69	12.32	12.77	13.39	13.85	15.28
	8H	12.88	13.30	13.95	14.37	15.81	12.47	12.89	13.54	13.96	15.40
	12H	12.95	13.33	14.04	14.42	15.86	12.53	12.91	13.62	13.99	15.44
8H	4H	12.41	12.83	13.48	13.90	15.35	12.05	12.47	13.12	13.54	14.98
	6H	13.04	13.39	14.14	14.50	15.94	12.68	13.03	13.77	14.14	15.58
	8H	13.26	13.57	14.36	14.66	16.12	12.90	13.20	13.99	14.29	15.75
	12H	13.39	13.66	14.50	14.75	16.25	13.01	13.28	14.11	14.37	15.87
12H	4H	12.40	12.77	13.48	13.86	15.31	12.04	12.42	13.13	13.51	14.96
	6H	13.07	13.38	14.17	14.47	15.93	12.72	13.03	13.82	14.12	15.58
	8H	13.31	13.58	14.42	14.67	16.17	12.96	13.22	14.06	14.31	15.81