

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: P928808

Luminaire Tested: DFN2DIP-HX4F0-120D110US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928808
REPORT IS A COMBINATION OF REPORTS P900961 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D110US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

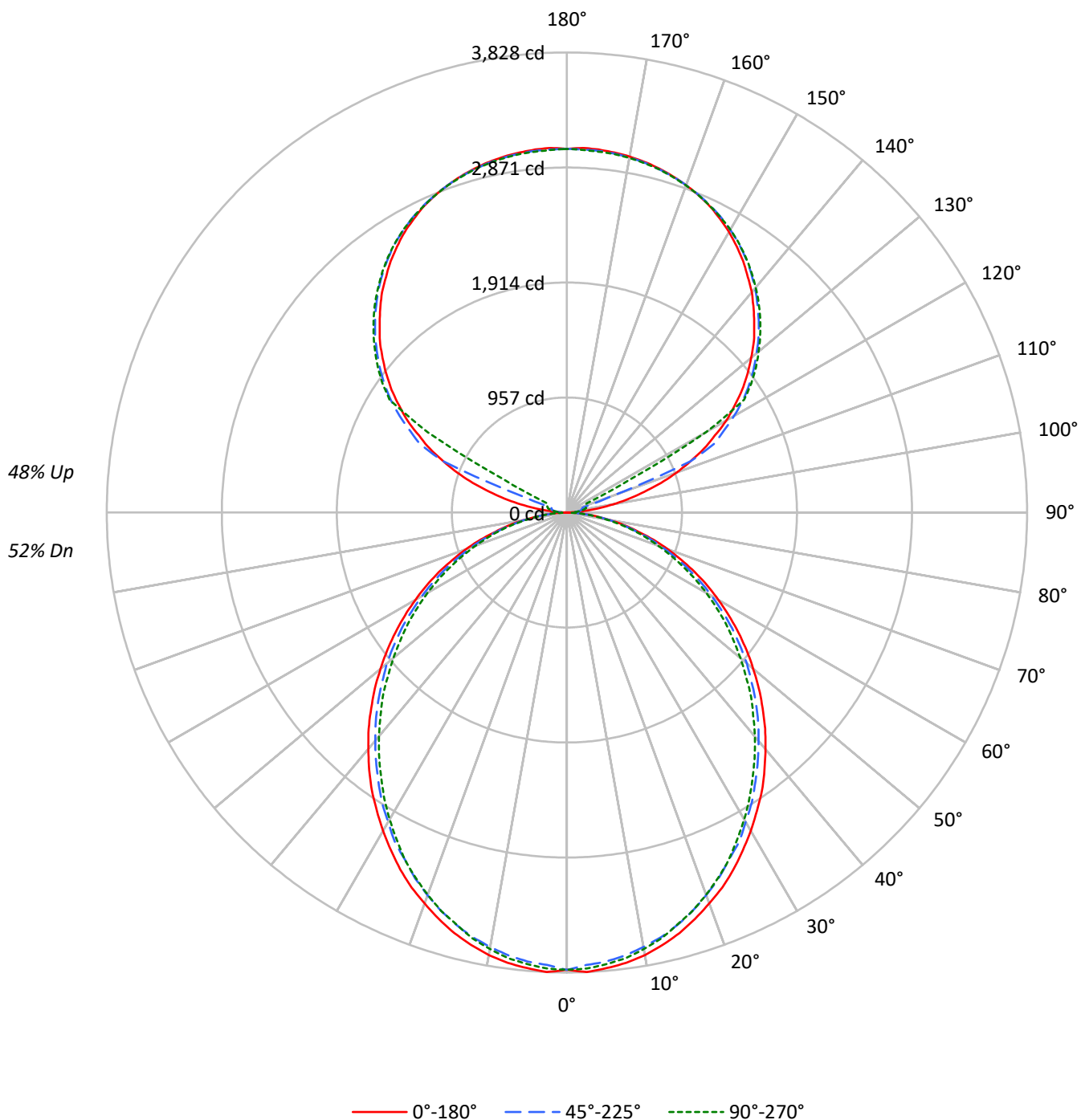
Lumens per Lamp: N/A
Luminaire Lumens: 18557.5 lumens
Efficiency: N/A
Efficacy: 87.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 213.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	58	58	58
1	98	94	90	87	91	87	84	81	74	72	69	62	61	59	51	50	49
2	89	82	76	71	83	76	71	66	65	61	58	55	52	49	45	43	41
3	82	72	65	59	75	67	61	55	57	52	48	48	45	42	40	37	35
4	75	64	56	50	69	59	52	47	51	46	41	43	39	36	36	33	30
5	69	57	49	43	63	53	46	40	46	40	36	39	34	31	32	29	26
6	63	51	43	37	58	48	40	35	41	35	31	35	31	27	29	26	23
7	58	46	38	33	54	43	36	31	37	32	27	32	27	24	27	23	21
8	54	42	34	29	50	39	32	27	34	28	24	29	25	21	25	21	19
9	51	38	31	26	47	36	29	24	31	26	22	27	22	19	23	19	17
10	47	35	28	23	44	33	26	22	29	23	20	25	21	17	21	18	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2830	2830	2830
5°	2834	2790	2809
10°	2812	2753	2771
15°	2770	2708	2712
20°	2715	2645	2651
25°	2660	2570	2581
30°	2590	2501	2492
35°	2524	2418	2397
40°	2443	2335	2307
45°	2363	2252	2216
50°	2274	2164	2109
55°	2182	2063	2011
60°	2078	1943	1899
65°	1964	1818	1767
70°	1819	1667	1624
75°	1618	1485	1493
80°	1377	1255	1242
85°	999	855	826

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2363 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	358.2	1.9
10°-20°	1007.7	5.4
20°-30°	1481.0	8.0
30°-40°	1720.1	9.3
40°-50°	1718.0	9.3
50°-60°	1498.0	8.1
60°-70°	1107.4	6.0
70°-80°	626.5	3.4
80°-90°	170.7	0.9
90°-100°	99.8	0.5
100°-110°	371.9	2.0
110°-120°	986.4	5.3
120°-130°	1636.0	8.8
130°-140°	1737.8	9.4
140°-150°	1615.1	8.7
150°-160°	1298.5	7.0
160°-170°	836.7	4.5
170°-180°	288.0	1.6
0°-30°	2846.9	15.3
0°-40°	4567.0	24.6
0°-60°	7783.0	41.9
0°-90°	9687.5	52.2
90°-120°	1458.0	7.9
90°-150°	6446.8	34.7
90°-180°	8870.0	47.8
0°-180°	18557.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3806	3806	3806	3806	3806	
5°	3806	3791	3751	3780	3773	361
15°	3623	3601	3553	3568	3550	1020
25°	3279	3250	3187	3194	3187	1509
35°	2829	2792	2734	2711	2693	1766
45°	2302	2276	2221	2181	2166	1776
55°	1742	1720	1676	1632	1614	1557
65°	1175	1153	1116	1083	1065	1162
75°	615	608	589	567	575	656
85°	150	146	143	132	128	167
90°	2	26	44	55	59	17
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	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3805.5	3805.5	3805.5	3805.5	3805.5
2.5°	3827.6	3809.3	3769.0	3805.5	3798.5
5°	3805.5	3791.1	3750.7	3779.8	3772.8
7.5°	3779.8	3758.0	3717.7	3747.2	3739.9
10°	3739.9	3714.2	3670.4	3699.4	3688.6
12.5°	3684.7	3662.9	3619.1	3637.3	3629.9
15°	3622.6	3600.8	3553.1	3567.8	3549.6
17.5°	3545.7	3524.0	3476.2	3494.5	3476.2
20°	3461.5	3439.7	3388.5	3399.4	3385.0
22.5°	3377.6	3344.6	3296.8	3296.8	3289.5
25°	3278.6	3249.5	3187.4	3194.4	3187.4
27.5°	3168.7	3143.1	3095.8	3084.9	3066.7
30°	3059.3	3029.8	2975.0	2964.2	2949.4
32.5°	2942.0	2920.3	2861.6	2839.5	2824.8
35°	2828.6	2792.2	2733.5	2711.4	2693.2
37.5°	2700.5	2667.6	2608.9	2583.3	2565.0
40°	2569.0	2539.5	2480.8	2448.2	2433.4
42.5°	2440.8	2411.3	2353.1	2316.2	2294.5
45°	2301.8	2276.2	2221.0	2181.1	2166.4
47.5°	2166.4	2140.7	2082.1	2041.7	2020.0
50°	2023.5	2005.2	1954.0	1902.7	1884.4
52.5°	1884.4	1858.9	1811.5	1771.1	1745.5
55°	1742.0	1719.9	1676.0	1632.1	1613.9
57.5°	1599.1	1580.9	1533.1	1489.2	1474.5
60°	1456.2	1441.9	1390.6	1350.3	1339.4
62.5°	1317.3	1291.6	1255.2	1218.7	1203.9
65°	1174.8	1152.7	1116.1	1083.1	1065.0
67.5°	1028.4	1009.8	977.2	951.6	936.8
70°	892.9	878.2	845.2	819.6	805.2
72.5°	754.0	739.2	720.9	695.4	684.4
75°	614.6	607.6	588.9	567.2	574.6
77.5°	490.3	475.6	468.2	457.3	446.5
80°	366.1	362.2	354.9	344.0	336.6
82.5°	248.8	248.8	245.4	230.6	230.6
85°	149.9	146.4	142.9	131.6	128.1
87.5°	66.0	58.6	51.3	40.3	36.5
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

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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	11.09	11.97	12.03	12.92	14.16	10.66	11.54	11.59	12.49	13.73
	3H	12.75	13.54	13.70	14.51	15.77	12.28	13.07	13.23	14.03	15.30
	4H	13.34	14.09	14.30	15.06	16.33	12.87	13.61	13.83	14.58	15.85
	6H	13.74	14.43	14.72	15.41	16.69	13.27	13.96	14.24	14.93	16.21
	8H	13.85	14.50	14.83	15.50	16.78	13.37	14.03	14.35	15.02	16.30
	12H	13.90	14.52	14.88	15.51	16.81	13.42	14.04	14.40	15.03	16.33
4H	2H	11.55	12.30	12.52	13.27	14.54	11.21	11.96	12.18	12.92	14.20
	3H	13.42	14.05	14.40	15.04	16.33	13.03	13.65	14.01	14.65	15.94
	4H	14.14	14.71	15.13	15.70	17.01	13.73	14.30	14.72	15.29	16.60
	6H	14.66	15.15	15.66	16.16	17.47	14.25	14.74	15.25	15.75	17.06
	8H	14.81	15.27	15.81	16.27	17.60	14.39	14.85	15.39	15.86	17.18
	12H	14.88	15.30	15.90	16.32	17.65	14.46	14.87	15.48	15.90	17.22
8H	4H	14.34	14.80	15.34	15.80	17.13	13.98	14.44	14.98	15.44	16.77
	6H	14.97	15.35	16.00	16.40	17.72	14.61	14.99	15.63	16.04	17.36
	8H	15.19	15.53	16.23	16.56	17.90	14.82	15.16	15.86	16.19	17.53
	12H	15.33	15.62	16.36	16.65	18.03	14.94	15.24	15.98	16.27	17.65
12H	4H	14.32	14.74	15.34	15.76	17.09	13.97	14.39	14.99	15.41	16.74
	6H	15.00	15.34	16.03	16.37	17.71	14.65	14.98	15.68	16.02	17.36
	8H	15.24	15.54	16.28	16.57	17.95	14.89	15.18	15.93	16.21	17.60