

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: P928088

Luminaire Tested: DFN2DIP-HX4F0-100D110US850-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928088
REPORT IS A COMBINATION OF REPORTS P900957 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D110US850-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

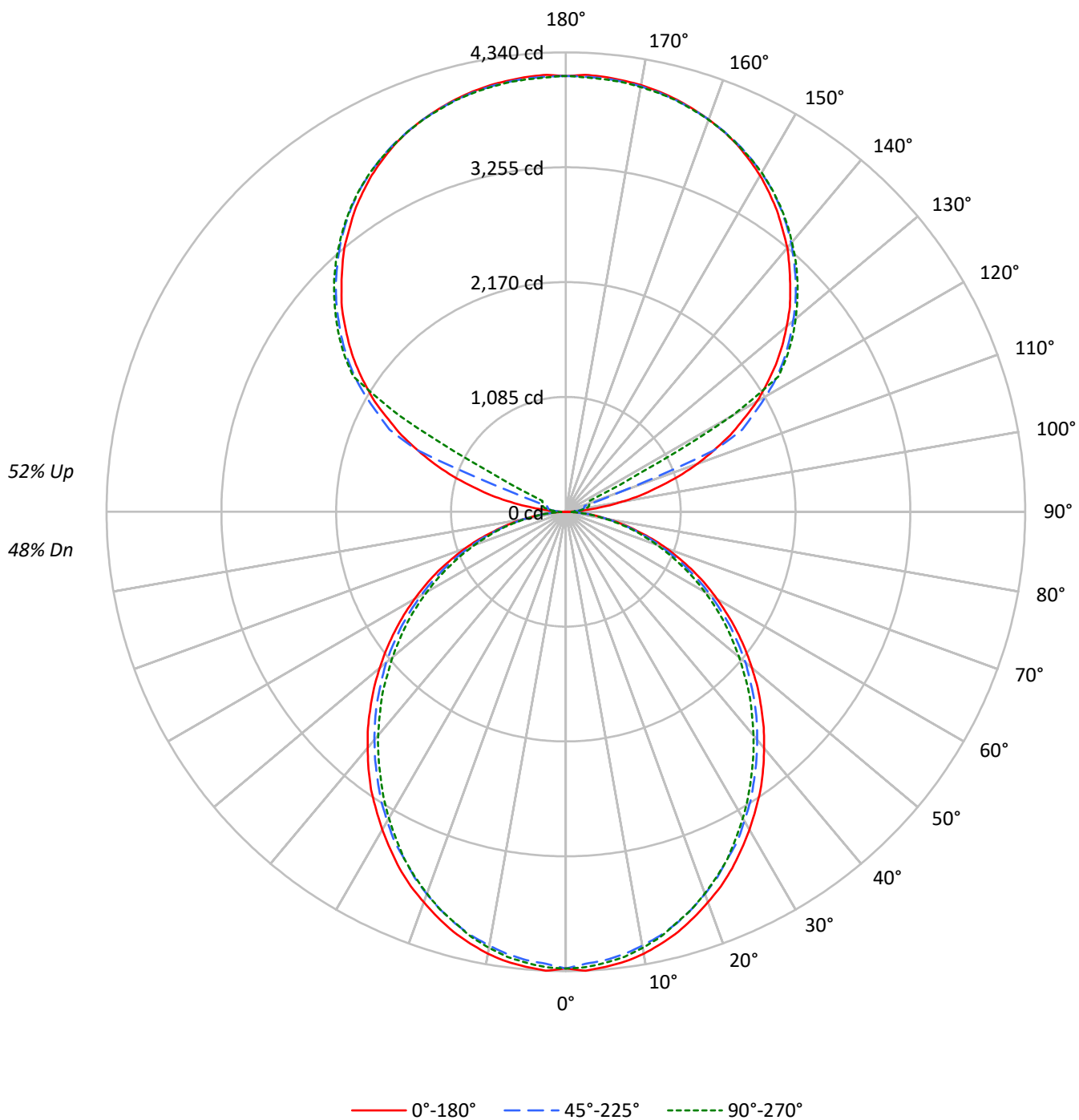
Lumens per Lamp: N/A
Luminaire Lumens: 23056.1 lumens
Efficiency: N/A
Efficacy: 123.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 186.6
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	82	82	82	67	67	67	54	54	54
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46
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	60	54	56	51	47	46	43	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	25
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22
7	58	46	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	16
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3209	3209	3209
5°	3214	3164	3185
10°	3188	3122	3142
15°	3142	3071	3075
20°	3078	3000	3006
25°	3016	2915	2927
30°	2937	2835	2825
35°	2863	2742	2718
40°	2771	2648	2616
45°	2679	2553	2512
50°	2579	2454	2391
55°	2474	2339	2280
60°	2356	2203	2153
65°	2227	2062	2003
70°	2063	1890	1842
75°	1835	1684	1693
80°	1561	1422	1409
85°	1133	969	937

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2679 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.1	1.8
10°-20°	1142.7	5.0
20°-30°	1679.4	7.3
30°-40°	1950.5	8.5
40°-50°	1948.1	8.4
50°-60°	1698.7	7.4
60°-70°	1255.7	5.4
70°-80°	710.4	3.1
80°-90°	194.8	0.8
90°-100°	135.7	0.6
100°-110°	506.1	2.2
110°-120°	1342.2	5.8
120°-130°	2226.1	9.7
130°-140°	2364.7	10.3
140°-150°	2197.7	9.5
150°-160°	1766.9	7.7
160°-170°	1138.5	4.9
170°-180°	391.9	1.7
0°-30°	3228.3	14.0
0°-40°	5178.7	22.5
0°-60°	8825.5	38.3
0°-90°	10986.3	47.7
90°-120°	1984.0	8.6
90°-150°	8772.5	38.0
90°-180°	12070.0	52.4
0°-180°	23056.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4315	4315	4315	4315	4315	
5°	4315	4299	4253	4286	4278	410
15°	4108	4083	4029	4046	4025	1157
25°	3718	3685	3614	3622	3614	1711
35°	3208	3166	3100	3075	3054	2003
45°	2610	2581	2518	2473	2456	2014
55°	1975	1950	1900	1851	1830	1766
65°	1332	1307	1266	1228	1208	1317
75°	697	689	668	643	652	744
85°	170	166	162	149	145	190
90°	3	36	59	75	80	21
95°	194	95	116	131	128	229
105°	906	995	182	214	226	968
115°	1713	1763	1838	459	244	1686
125°	2422	2461	2517	2538	2547	2160
135°	2997	3045	3071	3101	3095	2315
145°	3477	3474	3524	3545	3530	2174
155°	3828	3801	3837	3855	3831	1764
165°	4034	4016	4025	4046	4025	1140
175°	4126	4105	4111	4132	4102	393
180°	4117	4117	4117	4117	4117	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4315.2	4315.2	4315.2	4315.2	4315.2
2.5°	4340.3	4319.6	4273.8	4315.2	4307.2
5°	4315.2	4298.9	4253.1	4286.2	4278.2
7.5°	4286.2	4261.4	4215.6	4249.1	4240.8
10°	4240.8	4211.8	4162.0	4195.0	4182.7
12.5°	4178.3	4153.6	4103.9	4124.6	4116.2
15°	4107.8	4083.2	4029.0	4045.7	4025.1
17.5°	4020.7	3996.1	3941.8	3962.6	3941.8
20°	3925.1	3900.5	3842.4	3854.7	3838.4
22.5°	3830.0	3792.7	3738.4	3738.4	3730.1
25°	3717.8	3684.8	3614.3	3622.2	3614.3
27.5°	3593.2	3564.1	3510.4	3498.1	3477.4
30°	3469.1	3435.6	3373.5	3361.2	3344.4
32.5°	3336.1	3311.5	3244.9	3219.9	3203.1
35°	3207.6	3166.2	3099.7	3074.6	3053.9
37.5°	3062.3	3024.8	2958.4	2929.3	2908.6
40°	2913.0	2879.5	2813.1	2776.2	2759.4
42.5°	2767.7	2734.2	2668.3	2626.4	2601.8
45°	2610.1	2581.1	2518.5	2473.2	2456.5
47.5°	2456.5	2427.5	2361.0	2315.1	2290.5
50°	2294.5	2273.8	2215.7	2157.6	2136.9
52.5°	2136.9	2107.9	2054.1	2008.4	1979.3
55°	1975.4	1950.3	1900.5	1850.7	1830.1
57.5°	1813.3	1792.6	1738.5	1688.8	1672.0
60°	1651.3	1635.0	1576.9	1531.1	1518.8
62.5°	1493.7	1464.7	1423.3	1381.9	1365.2
65°	1332.1	1307.1	1265.7	1228.2	1207.6
67.5°	1166.2	1145.0	1108.1	1079.1	1062.3
70°	1012.5	995.8	958.4	929.3	913.0
72.5°	854.9	838.2	817.6	788.5	776.1
75°	696.9	689.0	667.8	643.2	651.5
77.5°	556.1	539.3	530.9	518.6	506.3
80°	415.1	410.8	402.3	390.0	381.7
82.5°	282.2	282.2	278.2	261.5	261.5
85°	169.9	166.0	162.0	149.3	145.3
87.5°	74.9	66.4	58.1	45.8	41.4
90°	2.9	35.7	59.4	74.6	80.3
92.5°	74.6	62.7	71.4	77.5	80.3
95°	193.5	95.2	116.0	131.2	128.1
97.5°	348.4	104.4	151.7	160.9	163.8
100°	527.4	119.2	169.8	193.5	199.5
102.5°	723.7	718.1	175.8	208.4	217.6
105°	905.6	995.1	181.9	214.4	226.5
107.5°	1117.2	1191.4	187.9	220.4	232.4
110°	1319.8	1382.1	521.5	223.6	235.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1510.6	1563.9	1513.3	229.2	238.4
115°	1712.9	1763.4	1838.2	458.8	244.4
117.5°	1888.7	1948.2	1999.1	1572.8	792.4
120°	2085.4	2129.9	2183.7	2219.4	1817.2
122.5°	2252.0	2299.7	2359.5	2377.3	2380.5
125°	2421.8	2460.8	2517.3	2538.2	2547.0
127.5°	2576.8	2618.5	2663.4	2693.1	2696.0
130°	2722.8	2770.6	2803.1	2836.0	2833.3
132.5°	2871.8	2910.7	2943.3	2970.1	2967.4
135°	2997.1	3044.8	3071.3	3101.4	3095.3
137.5°	3127.9	3163.6	3193.7	3223.4	3214.5
140°	3256.0	3280.0	3312.6	3339.4	3324.6
142.5°	3363.5	3384.3	3422.9	3446.7	3431.8
145°	3476.7	3473.5	3524.1	3545.0	3530.2
147.5°	3574.8	3565.9	3616.4	3631.3	3619.7
150°	3670.2	3649.4	3697.1	3714.8	3700.0
152.5°	3750.5	3726.8	3771.4	3789.5	3768.6
155°	3828.0	3801.4	3837.1	3854.9	3831.2
157.5°	3890.6	3866.9	3893.8	3914.7	3890.6
160°	3944.4	3926.3	3944.4	3962.0	3941.2
162.5°	3991.7	3974.1	3989.0	4009.8	3983.0
165°	4033.5	4015.8	4024.7	4045.5	4024.7
167.5°	4066.4	4048.4	4057.6	4078.5	4051.6
170°	4093.3	4075.2	4081.2	4102.2	4075.2
172.5°	4111.0	4093.3	4099.3	4120.2	4093.3
175°	4125.8	4105.0	4111.0	4131.9	4102.2
177.5°	4131.9	4111.0	4114.2	4135.0	4108.2
180°	4117.1	4117.1	4117.1	4117.1	4117.1

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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	11.10	11.94	12.08	12.93	14.24	10.67	11.51	11.65	12.50	13.81
	3H	12.76	13.52	13.75	14.51	15.84	12.29	13.04	13.28	14.04	15.37
	4H	13.35	14.06	14.35	15.07	16.40	12.88	13.59	13.88	14.59	15.93
	6H	13.75	14.41	14.76	15.41	16.76	13.27	13.93	14.28	14.94	16.28
	8H	13.85	14.48	14.87	15.50	16.85	13.38	14.00	14.40	15.03	16.37
	12H	13.90	14.50	14.92	15.51	16.88	13.42	14.02	14.44	15.03	16.40
4H	2H	11.56	12.28	12.57	13.28	14.61	11.22	11.93	12.22	12.93	14.27
	3H	13.43	14.02	14.44	15.05	16.40	13.03	13.63	14.05	14.66	16.01
	4H	14.14	14.69	15.17	15.71	17.08	13.74	14.28	14.76	15.30	16.68
	6H	14.66	15.13	15.69	16.17	17.54	14.25	14.72	15.28	15.76	17.13
	8H	14.81	15.24	15.84	16.28	17.67	14.39	14.83	15.43	15.87	17.25
	12H	14.88	15.27	15.93	16.33	17.72	14.46	14.85	15.51	15.91	17.29
8H	4H	14.34	14.77	15.37	15.82	17.20	13.98	14.41	15.01	15.45	16.84
	6H	14.97	15.33	16.03	16.41	17.79	14.61	14.97	15.67	16.05	17.43
	8H	15.19	15.51	16.26	16.58	17.97	14.82	15.14	15.89	16.21	17.60
	12H	15.32	15.60	16.39	16.66	18.10	14.94	15.22	16.01	16.28	17.72
12H	4H	14.32	14.72	15.38	15.77	17.16	13.97	14.37	15.02	15.42	16.81
	6H	15.00	15.32	16.07	16.38	17.78	14.65	14.97	15.71	16.03	17.43
	8H	15.24	15.52	16.31	16.58	18.02	14.88	15.16	15.95	16.23	17.67