

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: P928130

Luminaire Tested: DFN2DIP-HX4F0-110D120US850-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928130
REPORT IS A COMBINATION OF REPORTS P900978 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D120US850-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

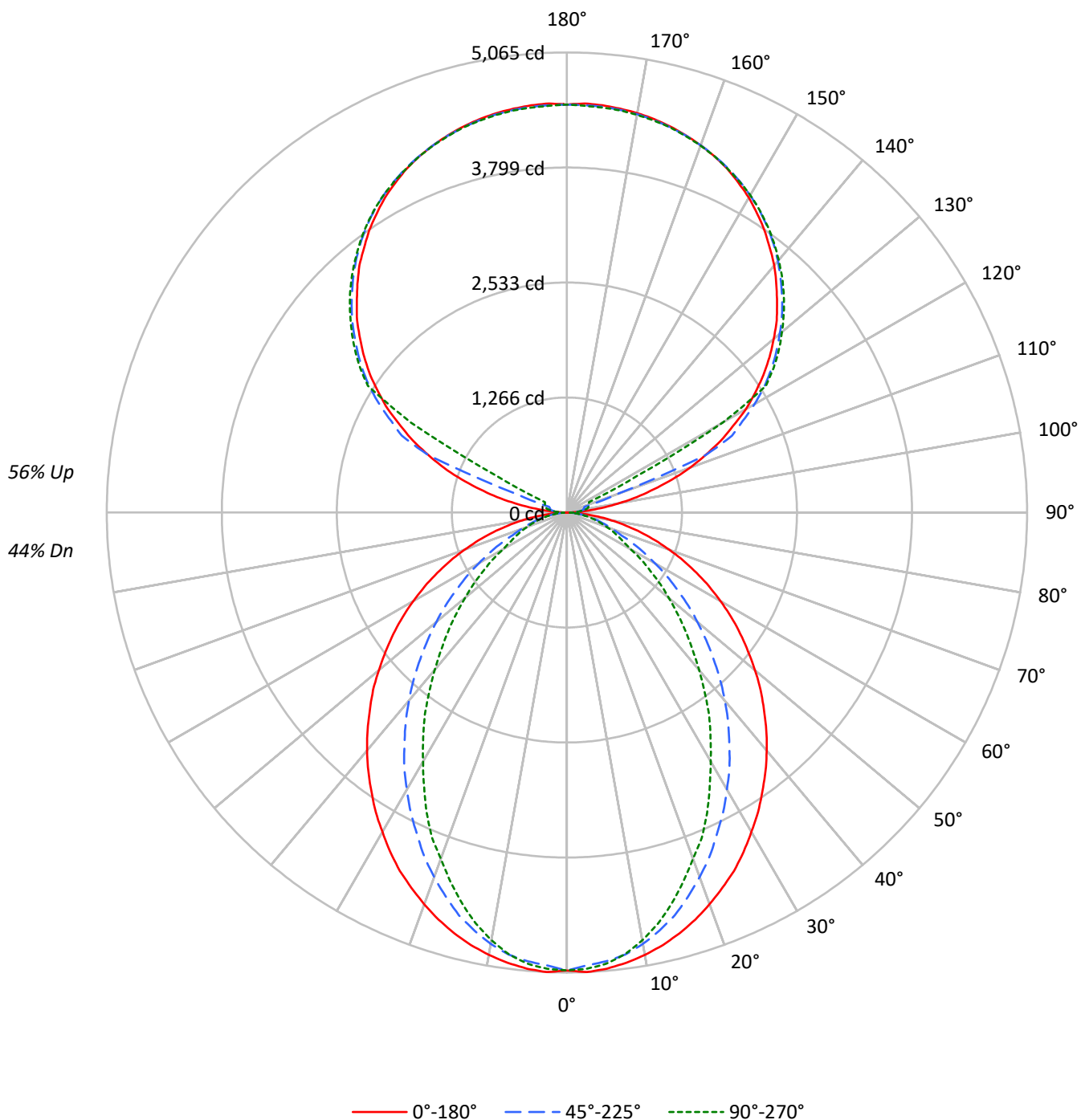
Lumens per Lamp: N/A
Luminaire Lumens: 23544.1 lumens
Efficiency: N/A
Efficacy: 113.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 208.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	106	106	106	106	97	97	97	97	80	80	80	65	65	65	51	51	51
1	97	93	89	86	89	85	82	79	71	69	67	58	56	55	45	44	44
2	89	81	76	71	81	75	70	66	62	59	56	51	49	46	40	39	37
3	81	72	65	59	74	66	60	55	55	51	47	46	42	40	36	34	32
4	74	64	56	51	68	59	52	47	50	45	41	41	37	34	33	30	28
5	68	57	49	44	62	53	46	41	45	39	35	37	33	30	30	27	25
6	63	51	44	38	58	48	41	36	40	35	31	33	29	26	27	24	22
7	58	46	39	33	53	43	36	31	37	31	27	31	27	24	25	22	20
8	54	42	35	30	50	39	33	28	33	28	24	28	24	21	23	20	18
9	51	39	31	26	46	36	29	25	31	26	22	26	22	19	21	18	16
10	47	35	28	24	43	33	27	22	28	23	20	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3749	3749	3749
5°	3755	3690	3713
10°	3718	3618	3593
15°	3667	3499	3406
20°	3600	3334	3177
25°	3531	3150	2956
30°	3438	2961	2675
35°	3347	2757	2429
40°	3255	2547	2146
45°	3147	2313	1890
50°	3036	2077	1639
55°	2920	1825	1399
60°	2786	1562	1152
65°	2632	1293	1037
70°	2445	1043	939
75°	2210	921	854
80°	1870	773	742
85°	1307	518	559

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3147 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	472.5	2.0
10°-20°	1297.2	5.5
20°-30°	1821.2	7.7
30°-40°	1985.2	8.4
40°-50°	1824.6	7.7
50°-60°	1433.0	6.1
60°-70°	932.7	4.0
70°-80°	480.1	2.0
80°-90°	130.5	0.6
90°-100°	148.1	0.6
100°-110°	552.1	2.3
110°-120°	1464.2	6.2
120°-130°	2428.5	10.3
130°-140°	2579.6	11.0
140°-150°	2397.5	10.2
150°-160°	1927.5	8.2
160°-170°	1242.0	5.3
170°-180°	427.5	1.8
0°-30°	3590.9	15.3
0°-40°	5576.1	23.7
0°-60°	8833.7	37.5
0°-90°	10377.1	44.1
90°-120°	2164.4	9.2
90°-150°	9570.0	40.6
90°-180°	13167.0	55.9
0°-180°	23544.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5042	5042	5042	5042	5042	
5°	5042	5019	4960	5001	4987	478
15°	4795	4745	4590	4504	4458	1351
25°	4353	4207	3906	3719	3650	2002
35°	3751	3518	3117	2829	2728	2348
45°	3066	2760	2282	1957	1848	2368
55°	2331	1976	1483	1209	1123	2083
65°	1574	1204	794	639	625	1561
75°	839	520	365	333	329	888
85°	196	100	87	87	87	225
90°	3	39	65	81	88	22
95°	211	104	126	143	140	250
105°	988	1086	198	234	247	1056
115°	1869	1924	2005	500	267	1840
125°	2642	2684	2746	2769	2779	2356
135°	3269	3322	3350	3383	3377	2526
145°	3793	3789	3844	3867	3851	2372
155°	4176	4147	4186	4205	4180	1924
165°	4400	4381	4390	4413	4390	1243
175°	4501	4478	4485	4508	4475	428
180°	4491	4491	4491	4491	4491	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5041.8	5041.8	5041.8	5041.8	5041.8
2.5°	5064.6	5041.8	4991.5	5037.5	5028.3
5°	5041.8	5019.1	4959.6	5000.7	4987.2
7.5°	5000.7	4973.5	4909.7	4927.6	4904.8
10°	4946.0	4914.0	4823.0	4809.0	4781.9
12.5°	4877.7	4836.6	4713.1	4686.0	4635.6
15°	4795.4	4745.1	4590.2	4503.5	4458.0
17.5°	4699.6	4626.5	4434.8	4334.5	4261.4
20°	4590.2	4498.7	4270.6	4156.9	4056.2
22.5°	4471.6	4366.5	4101.7	3946.8	3878.5
25°	4352.9	4206.8	3905.7	3718.8	3650.1
27.5°	4211.6	4056.2	3723.1	3508.7	3403.6
30°	4061.0	3887.3	3522.3	3289.8	3166.4
32.5°	3914.9	3704.7	3331.0	3057.1	2942.8
35°	3750.7	3517.9	3116.6	2829.1	2728.4
37.5°	3591.1	3339.8	2915.7	2600.5	2486.8
40°	3422.0	3148.6	2705.6	2381.7	2263.1
42.5°	3248.7	2956.8	2496.0	2158.1	2044.3
45°	3066.3	2760.3	2281.5	1957.2	1847.8
47.5°	2892.9	2569.1	2076.3	1751.9	1651.7
50°	2701.2	2377.4	1875.4	1560.3	1464.9
52.5°	2513.9	2171.6	1683.7	1382.6	1295.9
55°	2331.3	1975.6	1482.7	1209.3	1122.6
57.5°	2144.6	1779.5	1305.1	1049.6	976.4
60°	1952.8	1587.9	1117.8	885.4	812.3
62.5°	1766.0	1401.0	958.1	739.3	702.9
65°	1574.2	1204.4	793.9	639.0	624.9
67.5°	1391.8	1021.9	639.0	561.0	547.5
70°	1200.0	844.3	529.1	483.6	465.2
72.5°	1017.5	679.7	442.5	406.1	396.9
75°	839.4	519.9	365.0	333.0	328.7
77.5°	661.7	369.4	287.6	269.2	259.9
80°	497.2	264.8	218.8	201.0	201.0
82.5°	346.6	178.1	150.6	141.4	141.4
85°	196.1	100.3	86.6	86.6	86.6
87.5°	73.1	36.3	36.3	31.9	31.9
90°	3.1	38.9	64.9	81.4	87.6
92.5°	81.4	68.3	78.0	84.5	87.6
95°	211.0	103.8	126.5	143.2	139.7
97.5°	380.2	113.9	165.6	175.6	178.7
100°	575.3	130.1	185.2	211.0	217.7
102.5°	789.6	783.4	191.7	227.3	237.3
105°	987.9	1085.6	198.4	233.9	247.0
107.5°	1218.7	1299.7	204.9	240.4	253.5
110°	1439.8	1507.8	568.8	243.9	256.6



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1647.9	1706.1	1651.0	250.1	260.1
115°	1868.6	1923.8	2005.2	500.5	266.7
117.5°	2060.4	2125.3	2180.8	1715.7	864.5
120°	2275.0	2323.6	2382.2	2421.3	1982.4
122.5°	2456.8	2508.9	2574.1	2593.4	2596.8
125°	2642.0	2684.4	2746.2	2769.0	2778.6
127.5°	2811.0	2856.6	2905.6	2938.0	2941.1
130°	2970.3	3022.5	3058.0	3093.9	3090.8
132.5°	3132.8	3175.3	3210.8	3240.2	3237.1
135°	3269.4	3321.6	3350.5	3383.3	3376.8
137.5°	3412.3	3451.2	3484.0	3516.4	3506.8
140°	3552.0	3578.2	3613.7	3643.1	3626.9
142.5°	3669.2	3692.1	3734.1	3760.0	3743.8
145°	3792.8	3789.3	3844.5	3867.3	3851.0
147.5°	3899.7	3890.0	3945.3	3961.5	3948.7
150°	4003.8	3981.1	4033.2	4052.5	4036.3
152.5°	4091.4	4065.6	4114.3	4133.9	4111.2
155°	4175.9	4147.0	4186.0	4205.3	4179.5
157.5°	4244.3	4218.4	4247.8	4270.5	4244.3
160°	4302.9	4283.3	4302.9	4322.2	4299.5
162.5°	4354.7	4335.4	4351.6	4374.3	4345.1
165°	4400.2	4380.9	4390.5	4413.4	4390.5
167.5°	4436.1	4416.4	4426.5	4449.2	4419.9
170°	4465.4	4445.8	4452.3	4475.0	4445.8
172.5°	4484.7	4465.4	4472.0	4494.8	4465.4
175°	4500.9	4478.1	4484.7	4507.5	4475.0
177.5°	4507.5	4484.7	4488.2	4511.0	4481.7
180°	4491.3	4491.3	4491.3	4491.3	4491.3

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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	11.16	11.94	12.17	12.96	14.32	7.13	7.92	8.15	8.94	10.29
	3H	12.83	13.54	13.86	14.56	15.94	8.32	9.02	9.34	10.05	11.42
	4H	13.44	14.10	14.48	15.13	16.52	8.77	9.43	9.80	10.46	11.85
	6H	13.86	14.47	14.91	15.51	16.90	9.09	9.70	10.13	10.73	12.13
	8H	13.99	14.57	15.04	15.62	17.01	9.18	9.76	10.23	10.81	12.20
	12H	14.05	14.60	15.10	15.64	17.06	9.22	9.77	10.28	10.82	12.23
4H	2H	11.17	11.84	12.21	12.87	14.25	7.72	8.39	8.77	9.42	10.80
	3H	13.00	13.55	14.05	14.61	16.00	9.07	9.62	10.12	10.68	12.08
	4H	13.69	14.19	14.75	15.24	16.66	9.62	10.12	10.67	11.17	12.59
	6H	14.20	14.64	15.27	15.71	17.12	10.04	10.47	11.10	11.54	12.96
	8H	14.38	14.78	15.44	15.85	17.28	10.17	10.57	11.23	11.64	13.07
	12H	14.47	14.84	15.56	15.92	17.35	10.23	10.60	11.31	11.67	13.11
8H	4H	13.65	14.06	14.72	15.12	16.55	9.90	10.30	10.96	11.37	12.79
	6H	14.22	14.55	15.31	15.66	17.09	10.42	10.75	11.50	11.86	13.28
	8H	14.44	14.73	15.53	15.82	17.27	10.61	10.90	11.70	11.99	13.44
	12H	14.57	14.83	15.67	15.92	17.40	10.73	10.98	11.82	12.07	13.56
12H	4H	13.60	13.97	14.69	15.05	16.48	9.90	10.26	10.98	11.34	12.78
	6H	14.20	14.49	15.29	15.58	17.02	10.46	10.76	11.56	11.85	13.29
	8H	14.42	14.67	15.51	15.76	17.24	10.67	10.93	11.77	12.02	13.50