

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: P911009

Luminaire Tested: DFN2DIP-HX4F0-110D100US850-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P911009
REPORT IS A COMBINATION OF REPORTS P899422 AND P896188
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D100US850-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

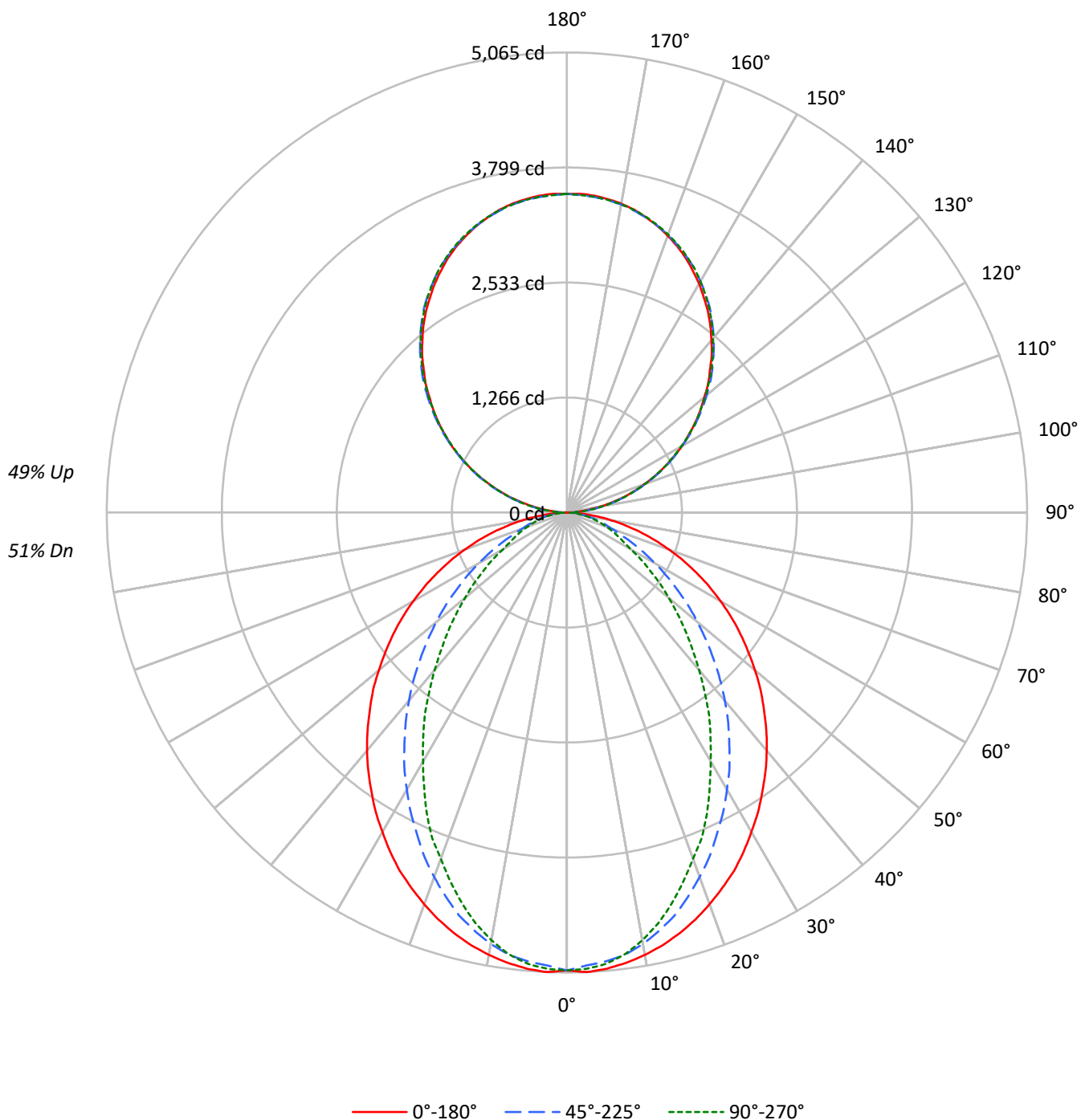
Lumens per Lamp: N/A
Luminaire Lumens: 20183.8 lumens
Efficiency: N/A
Efficacy: 118.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 170
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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57
1	99	94	91	87	91	87	84	81	74	72	70	63	61	59	52	50	49
2	90	83	77	72	83	77	72	68	66	62	59	56	53	50	46	44	42
3	83	73	66	61	76	68	62	57	59	54	50	50	46	43	41	39	37
4	76	65	58	52	70	61	54	49	52	47	43	44	41	37	37	34	32
5	70	58	51	45	64	55	48	42	47	42	38	40	36	33	34	31	28
6	64	53	45	39	59	49	42	37	43	37	33	36	32	29	31	28	25
7	60	48	40	34	55	45	38	33	39	33	29	33	29	26	28	25	23
8	55	43	36	31	51	41	34	29	36	30	26	31	26	23	26	23	20
9	52	40	32	27	48	37	31	26	33	27	24	28	24	21	24	21	18
10	48	37	29	25	45	34	28	24	30	25	21	26	22	19	22	19	17

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	2.3
10°-20°	1297.2	6.4
20°-30°	1821.2	9.0
30°-40°	1985.2	9.8
40°-50°	1824.6	9.0
50°-60°	1433.0	7.1
60°-70°	932.7	4.6
70°-80°	480.1	2.4
80°-90°	132.5	0.7
90°-100°	217.0	1.1
100°-110°	689.6	3.4
110°-120°	1180.1	5.8
120°-130°	1552.0	7.7
130°-140°	1742.1	8.6
140°-150°	1708.3	8.5
150°-160°	1433.0	7.1
160°-170°	950.4	4.7
170°-180°	332.2	1.6
0°-30°	3590.9	17.8
0°-40°	5576.1	27.6
0°-60°	8833.7	43.8
0°-90°	10379.1	51.4
90°-120°	2086.7	10.3
90°-150°	7089.1	35.1
90°-180°	9805.0	48.6
0°-180°	20183.8	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	38	104	97	100	20
95°	154	184	189	189	184	172
105°	637	645	651	657	657	672
115°	1184	1201	1196	1193	1184	1171
125°	1722	1749	1740	1731	1728	1539
135°	2228	2261	2267	2264	2255	1722
145°	2705	2726	2743	2746	2734	1690
155°	3093	3101	3111	3126	3116	1424
165°	3365	3361	3361	3383	3368	949
175°	3501	3493	3486	3507	3489	333
180°	3507	3507	3507	3507	3507	

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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°	3.2	38.0	103.6	97.3	100.5
92.5°	65.5	88.8	92.0	95.2	95.2
95°	154.4	184.0	189.3	189.3	184.0
97.5°	257.0	284.5	296.1	296.1	296.1
100°	375.4	399.7	408.1	408.1	405.0
102.5°	500.2	518.1	529.8	532.9	529.8
105°	636.6	645.0	651.3	656.6	656.6
107.5°	771.9	784.6	784.6	786.7	771.9
110°	903.1	919.9	919.9	919.9	911.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1044.7	1062.6	1059.5	1051.0	1044.7
115°	1184.3	1201.2	1195.9	1192.7	1184.3
117.5°	1322.8	1346.1	1331.2	1322.8	1314.3
120°	1462.3	1485.6	1462.3	1462.3	1452.9
122.5°	1589.2	1618.8	1604.1	1595.6	1589.2
125°	1722.5	1748.9	1740.5	1730.9	1727.8
127.5°	1852.6	1885.3	1873.7	1861.0	1852.6
130°	1974.1	2012.2	2007.0	2000.5	1989.0
132.5°	2110.5	2140.1	2142.3	2127.5	2119.0
135°	2227.9	2260.7	2267.0	2263.9	2255.4
137.5°	2359.1	2385.5	2390.8	2388.7	2375.9
140°	2474.3	2500.7	2515.5	2515.5	2503.9
142.5°	2592.7	2619.1	2627.6	2630.8	2619.1
145°	2704.7	2725.9	2742.9	2746.0	2734.4
147.5°	2805.2	2831.7	2844.4	2849.7	2838.0
150°	2908.9	2926.9	2938.5	2947.9	2938.5
152.5°	3000.8	3018.8	3033.7	3045.3	3033.7
155°	3092.9	3101.3	3110.9	3125.6	3116.1
157.5°	3172.2	3178.5	3183.8	3204.9	3190.1
160°	3243.0	3249.4	3252.5	3270.4	3257.8
162.5°	3308.6	3308.6	3311.7	3331.8	3317.0
165°	3364.6	3361.4	3361.4	3382.6	3367.8
167.5°	3415.4	3405.8	3405.8	3427.0	3412.2
170°	3453.4	3445.0	3441.8	3463.0	3445.0
172.5°	3479.8	3471.4	3468.2	3489.4	3471.4
175°	3501.0	3492.6	3486.3	3507.3	3489.4
177.5°	3512.6	3504.2	3497.8	3515.8	3497.8
180°	3507.3	3507.3	3507.3	3507.3	3507.3

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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	11.87	12.71	12.82	13.67	14.93	7.84	8.69	8.80	9.65	10.90
	3H	13.55	14.30	14.51	15.27	16.55	9.03	9.79	10.00	10.76	12.04
	4H	14.16	14.87	15.14	15.85	17.13	9.49	10.20	10.46	11.17	12.46
	6H	14.58	15.24	15.57	16.22	17.52	9.81	10.47	10.80	11.45	12.74
	8H	14.71	15.33	15.70	16.33	17.62	9.90	10.52	10.90	11.52	12.82
	12H	14.77	15.36	15.77	16.36	17.67	9.95	10.54	10.95	11.53	12.85
4H	2H	11.89	12.60	12.87	13.58	14.86	8.44	9.15	9.42	10.13	11.41
	3H	13.72	14.31	14.71	15.32	16.62	9.79	10.39	10.79	11.39	12.69
	4H	14.41	14.96	15.42	15.95	17.28	10.34	10.88	11.34	11.88	13.21
	6H	14.93	15.40	15.94	16.42	17.74	10.77	11.23	11.78	12.25	13.57
	8H	15.11	15.54	16.12	16.56	17.89	10.90	11.33	11.91	12.34	13.68
	12H	15.20	15.59	16.23	16.63	17.96	10.96	11.35	11.99	12.38	13.72
8H	4H	14.38	14.82	15.40	15.83	17.17	10.63	11.06	11.64	12.07	13.41
	6H	14.95	15.31	15.99	16.37	17.70	11.15	11.50	12.18	12.56	13.89
	8H	15.17	15.48	16.21	16.53	17.88	11.34	11.65	12.38	12.70	14.05
	12H	15.31	15.59	16.36	16.62	18.02	11.46	11.74	12.51	12.77	14.17
12H	4H	14.34	14.73	15.37	15.76	17.10	10.63	11.02	11.66	12.05	13.39
	6H	14.93	15.24	15.97	16.29	17.64	11.20	11.51	12.24	12.55	13.91
	8H	15.15	15.43	16.20	16.46	17.86	11.41	11.69	12.46	12.72	14.12