

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: P920437

Luminaire Tested: DFN2DIP-SQ4F0-090D120US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920437
REPORT IS A COMBINATION OF REPORTS P901693 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D120US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

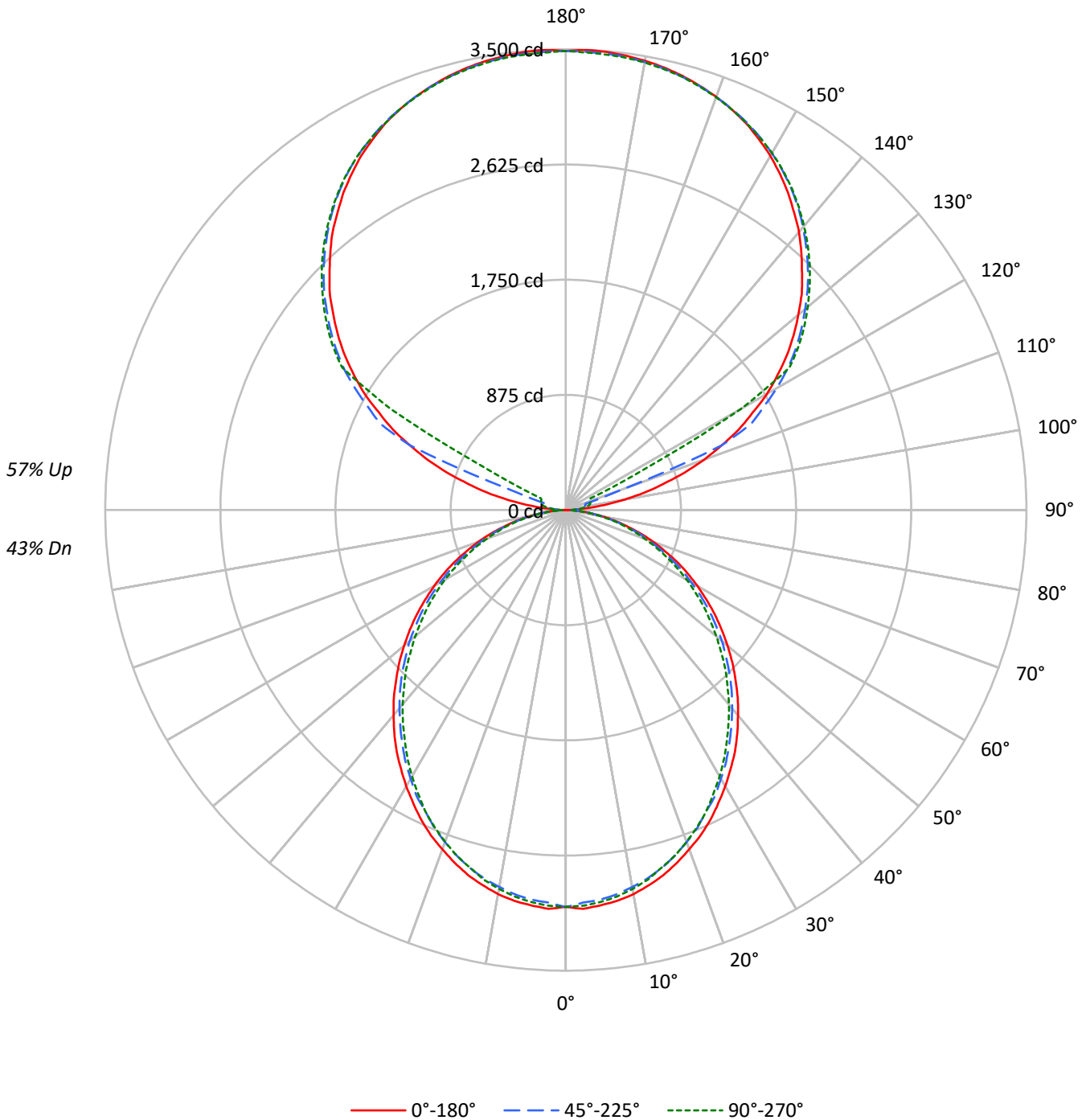
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17900.2 lumens
Efficiency: N/A
Efficacy: 103.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 172.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
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				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	105	105	105	105	96	96	96	96	79	79	79	64	64	64	50	50	50	43				43
1	96	92	88	85	88	84	81	78	70	67	65	56	55	53	44	43	42	36				36
2	88	80	74	69	80	74	68	64	61	57	54	49	47	44	39	37	35	30				30
3	80	71	63	58	73	65	58	53	54	49	45	44	40	38	34	32	30	26				26
4	73	62	55	49	66	57	50	45	48	43	39	39	35	32	31	28	26	22				22
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23	19				19
6	62	50	42	36	56	46	39	34	38	33	29	31	27	24	25	22	20	17				17
7	57	45	37	32	52	41	34	29	35	29	25	29	25	22	23	20	18	15				15
8	53	41	33	28	48	38	31	26	32	26	23	26	22	19	21	18	16	13				13
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14	12				12
10	46	34	27	22	42	31	25	21	27	22	18	22	18	16	18	15	13	11				11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2116	2116	2116
5°	2119	2087	2101
10°	2102	2059	2073
15°	2071	2025	2029
20°	2029	1979	1984
25°	1988	1923	1932
30°	1935	1871	1866
35°	1886	1809	1796
40°	1825	1747	1729
45°	1765	1685	1661
50°	1699	1620	1582
55°	1629	1545	1509
60°	1551	1455	1426
65°	1465	1363	1328
70°	1356	1250	1223
75°	1205	1115	1127
80°	1024	943	941
85°	740	645	633

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 1869 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	283.8	1.6
10°-20°	798.5	4.5
20°-30°	1173.4	6.6
30°-40°	1362.9	7.6
40°-50°	1361.2	7.6
50°-60°	1186.9	6.6
60°-70°	877.4	4.9
70°-80°	496.4	2.8
80°-90°	137.2	0.8
90°-100°	115.0	0.6
100°-110°	428.6	2.4
110°-120°	1136.8	6.4
120°-130°	1885.4	10.5
130°-140°	2002.8	11.2
140°-150°	1861.3	10.4
150°-160°	1496.5	8.4
160°-170°	964.3	5.4
170°-180°	331.9	1.9
0°-30°	2255.7	12.6
0°-40°	3618.6	20.2
0°-60°	6166.7	34.5
0°-90°	7677.7	42.9
90°-120°	1680.4	9.4
90°-150°	7429.9	41.5
90°-180°	10223.0	57.1
0°-180°	17900.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3015	3015	3015	3015	3015	
5°	3015	3004	2972	2995	2989	286
15°	2870	2853	2815	2827	2812	808
25°	2598	2575	2526	2531	2526	1195
35°	2241	2212	2166	2148	2134	1400
45°	1824	1804	1760	1728	1716	1408
55°	1380	1363	1328	1293	1279	1234
65°	931	913	884	858	844	920
75°	487	481	467	449	455	520
85°	119	116	113	104	102	132
90°	2	30	50	63	68	16
95°	164	81	98	111	108	194
105°	767	843	154	182	192	820
115°	1451	1494	1557	389	207	1428
125°	2051	2084	2132	2150	2157	1829
135°	2538	2579	2601	2627	2622	1961
145°	2945	2942	2985	3002	2990	1842
155°	3242	3220	3250	3265	3245	1494
165°	3416	3401	3409	3426	3409	965
175°	3494	3477	3482	3500	3474	333
180°	3487	3487	3487	3487	3487	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3015.1	3015.1	3015.1	3015.1	3015.1
2.5°	3032.7	3018.2	2986.3	3015.1	3009.6
5°	3015.1	3003.8	2971.8	2994.9	2989.3
7.5°	2994.9	2977.7	2945.6	2969.1	2963.2
10°	2963.2	2942.9	2908.1	2931.2	2922.6
12.5°	2919.5	2902.3	2867.6	2881.9	2876.2
15°	2870.3	2853.1	2815.2	2826.9	2812.4
17.5°	2809.3	2792.1	2754.3	2768.8	2754.3
20°	2742.6	2725.4	2684.8	2693.4	2682.0
22.5°	2676.2	2650.1	2612.2	2612.2	2606.3
25°	2597.7	2574.6	2525.5	2531.0	2525.5
27.5°	2510.7	2490.4	2452.9	2444.3	2429.8
30°	2424.0	2400.5	2357.2	2348.5	2336.9
32.5°	2331.1	2313.8	2267.4	2249.9	2238.2
35°	2241.3	2212.3	2165.8	2148.4	2133.9
37.5°	2139.8	2113.6	2067.1	2046.9	2032.4
40°	2035.4	2012.1	1965.6	1939.7	1928.1
42.5°	1933.9	1910.6	1864.4	1835.2	1818.0
45°	1823.8	1803.5	1759.8	1728.1	1716.5
47.5°	1716.5	1696.2	1649.7	1617.7	1600.5
50°	1603.3	1588.8	1548.2	1507.6	1493.1
52.5°	1493.1	1472.8	1435.3	1403.3	1383.0
55°	1380.3	1362.7	1327.9	1293.2	1278.8
57.5°	1267.0	1252.6	1214.8	1180.0	1168.3
60°	1153.8	1142.5	1101.8	1069.9	1061.3
62.5°	1043.7	1023.4	994.5	965.6	953.9
65°	930.8	913.3	884.3	858.2	843.8
67.5°	814.8	800.1	774.2	754.0	742.3
70°	707.5	695.8	669.7	649.4	638.0
72.5°	597.4	585.7	571.2	551.0	542.3
75°	487.0	481.4	466.7	449.4	455.3
77.5°	388.5	376.9	371.0	362.4	353.8
80°	290.1	287.0	281.1	272.5	266.7
82.5°	197.2	197.2	194.4	182.7	182.7
85°	118.7	116.0	113.2	104.3	101.5
87.5°	52.3	46.4	40.6	32.0	28.9
90°	2.4	30.2	50.4	63.2	68.0
92.5°	63.2	53.0	60.5	65.6	68.0
95°	163.8	80.6	98.2	111.2	108.5
97.5°	295.2	88.4	128.5	136.3	138.7
100°	446.7	101.0	143.8	163.8	169.0
102.5°	613.0	608.2	148.9	176.5	184.3
105°	767.0	842.8	154.0	181.6	191.7
107.5°	946.2	1009.1	159.1	186.7	196.8
110°	1117.8	1170.6	441.6	189.3	199.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1279.4	1324.6	1281.8	194.2	201.9
115°	1450.7	1493.6	1556.8	388.6	207.1
117.5°	1599.6	1650.0	1693.2	1332.0	671.1
120°	1766.3	1804.0	1849.5	1879.8	1539.1
122.5°	1907.4	1947.8	1998.5	2013.4	2016.1
125°	2051.2	2084.1	2132.1	2149.7	2157.2
127.5°	2182.4	2217.8	2255.8	2281.0	2283.4
130°	2306.1	2346.6	2374.1	2402.0	2399.6
132.5°	2432.2	2465.2	2492.8	2515.6	2513.2
135°	2538.3	2578.8	2601.2	2626.7	2621.7
137.5°	2649.2	2679.4	2704.9	2730.1	2722.6
140°	2757.7	2778.0	2805.6	2828.4	2815.8
142.5°	2848.7	2866.4	2899.1	2919.1	2906.6
145°	2944.6	2941.9	2984.7	3002.5	2989.8
147.5°	3027.6	3020.1	3063.0	3075.6	3065.7
150°	3108.5	3090.8	3131.3	3146.3	3133.7
152.5°	3176.5	3156.4	3194.2	3209.5	3191.8
155°	3242.1	3219.6	3249.9	3264.9	3244.8
157.5°	3295.1	3275.1	3297.9	3315.5	3295.1
160°	3340.7	3325.4	3340.7	3355.7	3338.0
162.5°	3380.9	3365.9	3378.5	3396.1	3373.4
165°	3416.2	3401.2	3408.7	3426.4	3408.7
167.5°	3444.1	3428.8	3436.6	3454.2	3431.5
170°	3466.8	3451.6	3456.6	3474.3	3451.6
172.5°	3481.8	3466.8	3472.0	3489.6	3466.8
175°	3494.4	3476.7	3481.8	3499.5	3474.3
177.5°	3499.5	3481.8	3484.5	3502.2	3479.5
180°	3487.0	3487.0	3487.0	3487.0	3487.0



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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	8.75	9.55	9.76	10.57	11.94
	3H	10.85	11.57	11.88	12.61	13.99	10.36	11.08	11.39	12.11	13.50
	4H	11.44	12.12	12.48	13.16	14.55	10.95	11.63	11.99	12.66	14.06
	6H	11.84	12.47	12.89	13.51	14.92	11.34	11.97	12.39	13.01	14.42
	8H	11.95	12.54	13.00	13.60	15.00	11.44	12.04	12.50	13.10	14.50
	12H	11.99	12.56	13.05	13.61	15.04	11.48	12.05	12.54	13.10	14.53
4H	2H	9.65	10.33	10.69	11.36	12.76	9.29	9.97	10.34	11.01	12.41
	3H	11.51	12.08	12.57	13.14	14.55	11.11	11.67	12.16	12.74	14.15
	4H	12.23	12.75	13.29	13.80	15.24	11.80	12.32	12.86	13.38	14.81
	6H	12.74	13.19	13.81	14.27	15.70	12.31	12.76	13.38	13.84	15.26
	8H	12.89	13.31	13.96	14.38	15.83	12.46	12.87	13.53	13.95	15.39
	12H	12.97	13.34	14.05	14.43	15.88	12.52	12.89	13.60	13.98	15.43
8H	4H	12.42	12.84	13.49	13.91	15.35	12.04	12.46	13.11	13.53	14.97
	6H	13.05	13.40	14.15	14.51	15.95	12.67	13.02	13.76	14.13	15.57
	8H	13.28	13.58	14.38	14.68	16.13	12.88	13.19	13.98	14.28	15.74
	12H	13.41	13.67	14.51	14.77	16.26	13.00	13.26	14.10	14.36	15.85
12H	4H	12.40	12.78	13.49	13.87	15.31	12.04	12.41	13.12	13.50	14.95
	6H	13.08	13.39	14.18	14.48	15.94	12.71	13.01	13.81	14.11	15.57
	8H	13.33	13.59	14.43	14.68	16.18	12.95	13.21	14.05	14.30	15.80