

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: P920513

Luminaire Tested: DFN2DIP-SQ4F0-110D140US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920513
REPORT IS A COMBINATION OF REPORTS P901715 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D140US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

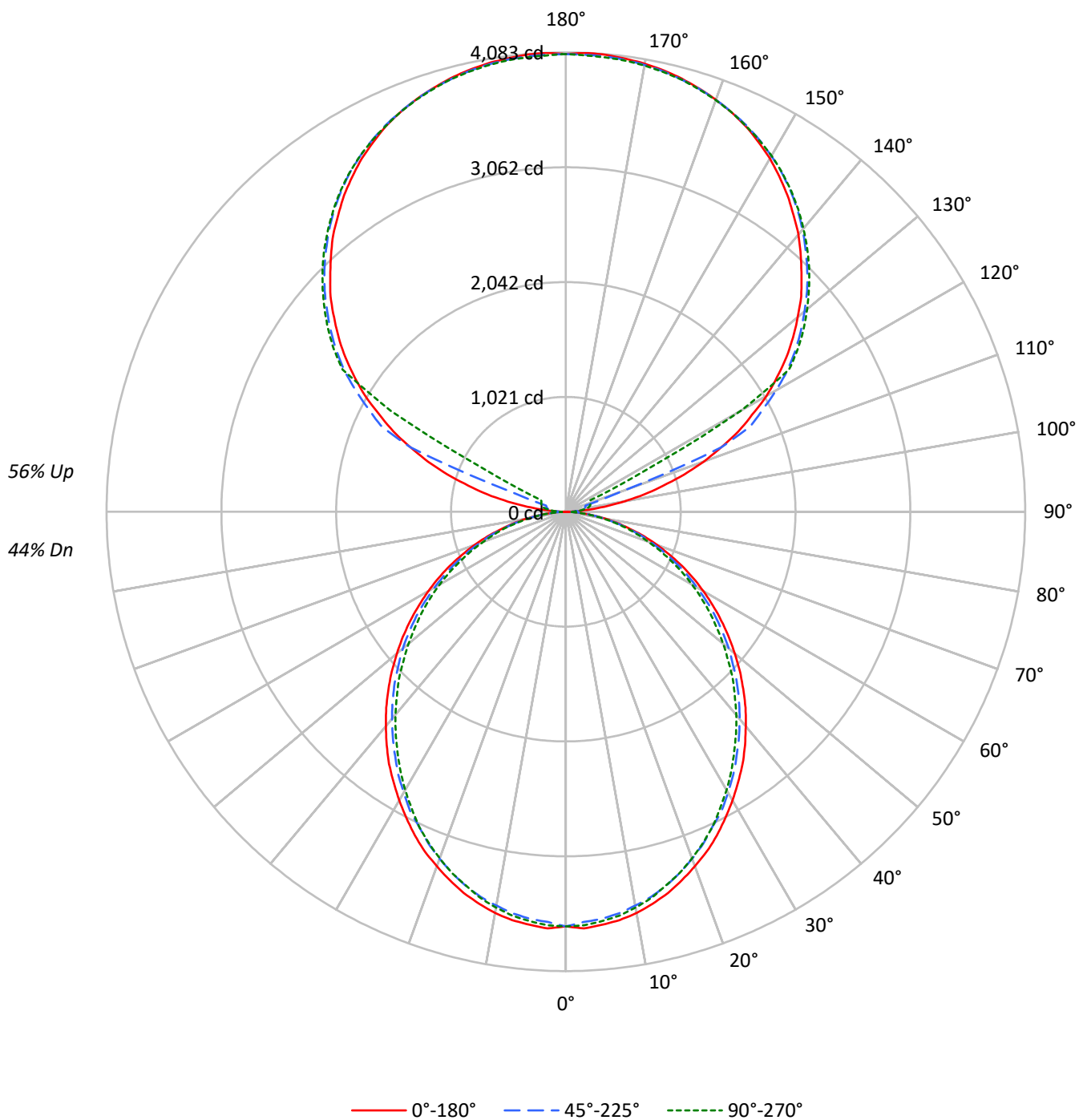
Lumens per Lamp: N/A
Luminaire Lumens: 21309.7 lumens
Efficiency: N/A
Efficacy: 101.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 210.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	96	92	88	85	88	84	81	78	70	68	66	57	55	54	45	44	43
2	88	80	74	69	80	74	69	64	61	58	54	50	47	45	39	38	36
3	80	71	63	58	73	65	59	54	54	50	46	44	41	38	35	33	31
4	73	63	55	49	67	58	51	45	48	43	39	39	36	33	31	29	26
5	67	56	48	42	61	51	44	39	43	38	34	35	31	28	28	25	23
6	62	50	42	36	56	46	39	34	39	33	29	32	28	25	25	23	20
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	23	20	18
8	53	41	33	28	48	38	31	26	32	27	23	27	22	19	21	18	16
9	49	37	30	25	45	35	28	23	29	24	20	24	20	17	20	17	15
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2586	2586	2586
5°	2590	2550	2568
10°	2569	2516	2534
15°	2531	2476	2480
20°	2480	2418	2425
25°	2429	2350	2362
30°	2366	2287	2281
35°	2305	2212	2195
40°	2231	2136	2113
45°	2157	2060	2030
50°	2076	1980	1933
55°	1991	1888	1845
60°	1895	1779	1743
65°	1791	1666	1623
70°	1658	1528	1495
75°	1473	1363	1377
80°	1252	1152	1151
85°	905	789	773

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2182 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	346.9	1.6
10°-20°	975.9	4.6
20°-30°	1434.2	6.7
30°-40°	1665.7	7.8
40°-50°	1663.7	7.8
50°-60°	1450.7	6.8
60°-70°	1072.4	5.0
70°-80°	606.7	2.8
80°-90°	167.3	0.8
90°-100°	134.2	0.6
100°-110°	500.0	2.3
110°-120°	1326.2	6.2
120°-130°	2199.7	10.3
130°-140°	2336.6	11.0
140°-150°	2171.6	10.2
150°-160°	1745.9	8.2
160°-170°	1125.0	5.3
170°-180°	387.2	1.8
0°-30°	2757.0	12.9
0°-40°	4422.7	20.8
0°-60°	7537.0	35.4
0°-90°	9383.4	44.0
90°-120°	1960.4	9.2
90°-150°	8668.2	40.7
90°-180°	11926.0	56.0
0°-180°	21309.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3685	3685	3685	3685	3685	
5°	3685	3671	3632	3660	3654	350
15°	3508	3487	3441	3455	3437	988
25°	3175	3147	3087	3094	3087	1461
35°	2739	2704	2647	2626	2608	1711
45°	2229	2204	2151	2112	2098	1720
55°	1687	1666	1623	1580	1563	1508
65°	1138	1116	1081	1049	1031	1125
75°	595	588	570	549	556	635
85°	145	142	138	127	124	162
90°	3	35	59	74	79	20
95°	191	94	115	130	127	226
105°	895	983	180	212	224	956
115°	1692	1742	1816	453	242	1666
125°	2393	2432	2487	2508	2517	2134
135°	2961	3009	3035	3064	3058	2288
145°	3435	3432	3482	3503	3488	2149
155°	3782	3756	3792	3809	3786	1743
165°	3986	3968	3977	3997	3977	1126
175°	4077	4056	4062	4083	4053	388
180°	4068	4068	4068	4068	4068	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3685.2	3685.2	3685.2	3685.2	3685.2
2.5°	3706.6	3688.9	3649.9	3685.2	3678.4
5°	3685.2	3671.3	3632.2	3660.4	3653.6
7.5°	3660.4	3639.4	3600.3	3628.8	3621.7
10°	3621.7	3596.8	3554.4	3582.5	3572.0
12.5°	3568.3	3547.2	3504.8	3522.4	3515.3
15°	3508.1	3487.0	3440.8	3455.1	3437.4
17.5°	3433.7	3412.7	3366.4	3384.1	3366.4
20°	3352.1	3331.0	3281.4	3291.9	3278.1
22.5°	3270.9	3238.9	3192.7	3192.7	3185.5
25°	3175.0	3146.9	3086.7	3093.5	3086.7
27.5°	3068.6	3043.8	2997.9	2987.4	2969.8
30°	2962.6	2934.0	2881.0	2870.5	2856.2
32.5°	2849.0	2828.0	2771.2	2749.8	2735.5
35°	2739.3	2704.0	2647.1	2625.7	2608.0
37.5°	2615.2	2583.3	2526.5	2501.6	2484.0
40°	2487.8	2459.2	2402.4	2370.8	2356.6
42.5°	2363.7	2335.1	2278.7	2243.0	2222.0
45°	2229.1	2204.2	2150.9	2112.2	2097.9
47.5°	2097.9	2073.1	2016.3	1977.2	1956.1
50°	1959.5	1941.9	1892.2	1842.6	1825.0
52.5°	1825.0	1800.1	1754.3	1715.1	1690.3
55°	1687.0	1665.5	1623.1	1580.5	1562.9
57.5°	1548.6	1530.9	1484.7	1442.2	1427.9
60°	1410.2	1396.4	1346.7	1307.6	1297.1
62.5°	1275.7	1250.9	1215.5	1180.2	1165.9
65°	1137.6	1116.2	1080.9	1049.0	1031.3
67.5°	995.9	977.9	946.3	921.5	907.2
70°	864.7	850.4	818.5	793.7	779.7
72.5°	730.1	715.8	698.2	673.4	662.8
75°	595.1	588.4	570.3	549.3	556.5
77.5°	474.8	460.5	453.4	442.9	432.4
80°	354.6	350.8	343.6	333.1	326.0
82.5°	241.0	241.0	237.6	223.3	223.3
85°	145.2	141.7	138.4	127.4	124.1
87.5°	63.9	56.7	49.6	39.1	35.3
90°	2.8	35.3	58.7	73.8	79.4
92.5°	73.8	61.9	70.6	76.5	79.4
95°	191.2	94.0	114.7	129.7	126.6
97.5°	344.3	103.1	150.0	159.0	161.9
100°	521.2	117.8	167.8	191.2	197.2
102.5°	715.1	709.5	173.7	205.9	215.0
105°	894.8	983.3	179.7	211.8	223.7
107.5°	1103.9	1177.2	185.6	217.7	229.6
110°	1304.2	1365.7	515.2	220.9	232.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1492.5	1545.3	1495.4	226.5	235.6
115°	1692.5	1742.5	1816.3	453.4	241.5
117.5°	1866.2	1924.9	1975.3	1554.1	783.0
120°	2060.6	2104.6	2157.7	2193.0	1795.6
122.5°	2225.2	2272.4	2331.5	2349.0	2352.2
125°	2393.1	2431.5	2487.4	2508.0	2516.8
127.5°	2546.1	2587.4	2631.7	2661.1	2663.9
130°	2690.4	2737.7	2769.8	2802.4	2799.5
132.5°	2837.7	2876.1	2908.3	2934.8	2932.0
135°	2961.4	3008.6	3034.8	3064.5	3058.5
137.5°	3090.7	3126.0	3155.7	3185.1	3176.4
140°	3217.3	3241.1	3273.2	3299.8	3285.1
142.5°	3323.5	3344.1	3382.3	3405.7	3391.0
145°	3435.4	3432.2	3482.2	3502.9	3488.2
147.5°	3532.2	3523.5	3573.5	3588.1	3576.6
150°	3626.6	3605.9	3653.1	3670.6	3656.0
152.5°	3705.9	3682.5	3726.6	3744.4	3723.7
155°	3782.4	3756.3	3791.6	3809.1	3785.6
157.5°	3844.4	3820.9	3847.5	3868.1	3844.4
160°	3897.5	3879.7	3897.5	3915.0	3894.4
162.5°	3944.3	3926.8	3941.6	3962.1	3935.6
165°	3985.6	3968.1	3976.9	3997.4	3976.9
167.5°	4018.1	4000.3	4009.3	4030.0	4003.4
170°	4044.6	4026.8	4032.7	4053.4	4026.8
172.5°	4062.1	4044.6	4050.6	4071.2	4044.6
175°	4076.8	4056.2	4062.1	4082.8	4053.4
177.5°	4082.8	4062.1	4065.3	4085.9	4059.3
180°	4068.0	4068.0	4068.0	4068.0	4068.0

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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	10.01	10.82	11.01	11.83	13.19	9.56	10.37	10.57	11.39	12.74
	3H	11.67	12.39	12.69	13.42	14.79	11.18	11.90	12.19	12.93	14.30
	4H	12.26	12.94	13.29	13.97	15.35	11.76	12.45	12.79	13.48	14.86
	6H	12.66	13.29	13.70	14.32	15.72	12.16	12.79	13.20	13.82	15.22
	8H	12.76	13.37	13.81	14.41	15.80	12.26	12.86	13.31	13.91	15.30
	12H	12.81	13.38	13.86	14.43	15.84	12.30	12.87	13.35	13.92	15.33
4H	2H	10.46	11.15	11.50	12.18	13.56	10.11	10.80	11.14	11.82	13.21
	3H	12.33	12.90	13.37	13.96	15.35	11.92	12.50	12.97	13.55	14.95
	4H	13.04	13.57	14.10	14.62	16.04	12.62	13.15	13.67	14.19	15.61
	6H	13.56	14.01	14.62	15.08	16.50	13.13	13.58	14.19	14.65	16.06
	8H	13.71	14.13	14.77	15.20	16.63	13.27	13.70	14.34	14.76	16.19
	12H	13.78	14.17	14.86	15.24	16.68	13.33	13.72	14.41	14.80	16.23
8H	4H	13.24	13.66	14.30	14.72	16.15	12.86	13.28	13.92	14.35	15.78
	6H	13.87	14.22	14.96	15.33	16.75	13.49	13.84	14.57	14.94	16.37
	8H	14.09	14.40	15.19	15.49	16.93	13.70	14.01	14.79	15.10	16.54
	12H	14.23	14.50	15.32	15.58	17.07	13.82	14.09	14.91	15.17	16.65
12H	4H	13.22	13.60	14.30	14.68	16.11	12.85	13.23	13.93	14.31	15.75
	6H	13.90	14.21	14.99	15.30	16.74	13.53	13.84	14.62	14.93	16.37
	8H	14.14	14.41	15.24	15.50	16.98	13.76	14.03	14.86	15.12	16.60