

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: P904069

Luminaire Tested: DFN2DIP-SQ4F0-090D120US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904069
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-SQ4F0-090D120US830-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

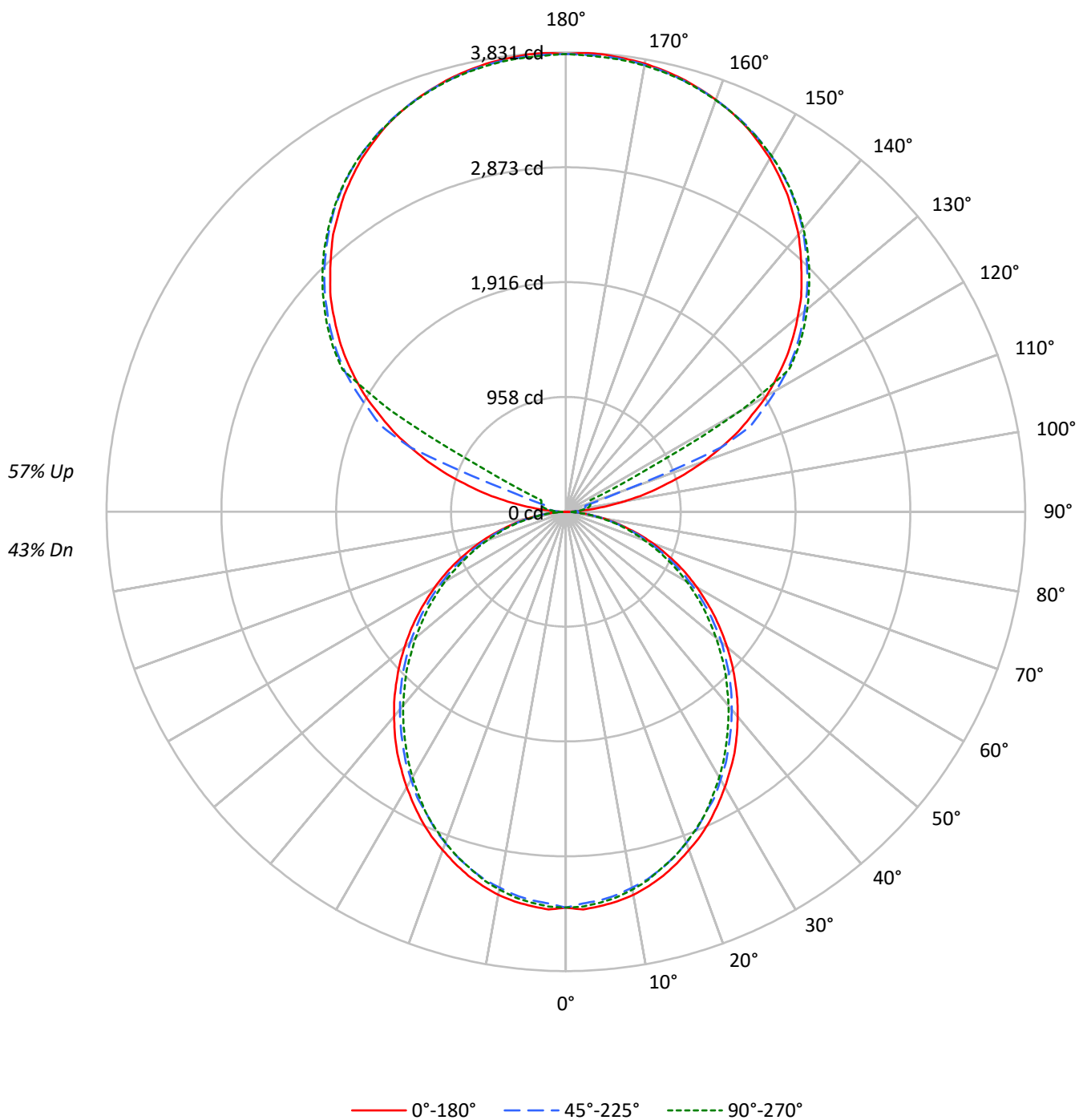
Lumens per Lamp: N/A
Luminaire Lumens: 19595.5 lumens
Efficiency: N/A
Efficacy: 113.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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
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	105	105	105	105	96	96	96	96	79	79	79	64	64	64	50	50	50
1	96	92	88	85	88	84	81	78	70	67	65	56	55	53	44	43	42
2	88	80	74	69	80	74	68	64	61	57	54	49	47	44	39	37	35
3	80	71	63	58	73	65	58	53	54	49	45	44	40	38	34	32	30
4	73	62	55	49	66	57	50	45	48	43	39	39	35	32	31	28	26
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23
6	62	50	42	36	56	46	39	34	38	33	29	31	27	24	25	22	20
7	57	45	37	32	52	41	34	29	35	29	25	29	25	22	23	20	18
8	53	41	33	28	48	38	31	26	32	26	23	26	22	19	21	18	16
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	27	22	18	22	18	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2316	2316	2316
5°	2320	2284	2300
10°	2301	2254	2269
15°	2267	2217	2221
20°	2221	2166	2172
25°	2176	2105	2115
30°	2119	2048	2043
35°	2065	1981	1966
40°	1998	1913	1893
45°	1932	1845	1818
50°	1859	1774	1732
55°	1783	1691	1652
60°	1698	1593	1561
65°	1604	1492	1454
70°	1485	1368	1339
75°	1320	1221	1234
80°	1121	1032	1031
85°	810	706	692

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2047 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	310.7	1.6
10°-20°	874.1	4.5
20°-30°	1284.6	6.6
30°-40°	1492.0	7.6
40°-50°	1490.1	7.6
50°-60°	1299.3	6.6
60°-70°	960.5	4.9
70°-80°	543.4	2.8
80°-90°	150.1	0.8
90°-100°	125.9	0.6
100°-110°	469.2	2.4
110°-120°	1244.4	6.4
120°-130°	2064.0	10.5
130°-140°	2192.4	11.2
140°-150°	2037.6	10.4
150°-160°	1638.2	8.4
160°-170°	1055.6	5.4
170°-180°	363.3	1.9
0°-30°	2469.3	12.6
0°-40°	3961.3	20.2
0°-60°	6750.7	34.5
0°-90°	8404.8	42.9
90°-120°	1839.5	9.4
90°-150°	8133.6	41.5
90°-180°	11191.0	57.1
0°-180°	19595.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3301	3301	3301	3301	3301	
5°	3301	3288	3253	3278	3272	313
15°	3142	3123	3082	3095	3079	885
25°	2844	2818	2765	2771	2765	1309
35°	2454	2422	2371	2352	2336	1532
45°	1996	1974	1926	1892	1879	1541
55°	1511	1492	1454	1416	1400	1351
65°	1019	1000	968	940	924	1007
75°	533	527	511	492	498	569
85°	130	127	124	114	111	145
90°	3	33	55	69	74	18
95°	179	88	108	122	119	212
105°	840	923	169	199	210	897
115°	1588	1635	1704	425	227	1563
125°	2245	2282	2334	2353	2362	2003
135°	2779	2823	2848	2876	2870	2146
145°	3224	3221	3267	3287	3273	2016
155°	3549	3524	3558	3574	3552	1635
165°	3740	3723	3732	3751	3732	1057
175°	3825	3806	3812	3831	3803	364
180°	3817	3817	3817	3817	3817	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3300.7	3300.7	3300.7	3300.7	3300.7
2.5°	3319.9	3304.1	3269.1	3300.7	3294.7
5°	3300.7	3288.2	3253.3	3278.5	3272.4
7.5°	3278.5	3259.7	3224.6	3250.3	3243.9
10°	3243.9	3221.6	3183.5	3208.8	3199.4
12.5°	3196.0	3177.1	3139.1	3154.9	3148.6
15°	3142.2	3123.3	3081.8	3094.6	3078.8
17.5°	3075.4	3056.6	3015.2	3031.0	3015.2
20°	3002.4	2983.5	2939.0	2948.5	2936.0
22.5°	2929.6	2901.1	2859.6	2859.6	2853.2
25°	2843.7	2818.5	2764.7	2770.7	2764.7
27.5°	2748.5	2726.2	2685.2	2675.8	2659.9
30°	2653.5	2627.9	2580.4	2571.0	2558.2
32.5°	2551.8	2533.0	2482.1	2463.0	2450.1
35°	2453.5	2421.9	2371.0	2351.8	2336.0
37.5°	2342.4	2313.8	2262.9	2240.7	2224.9
40°	2228.2	2202.6	2151.7	2123.5	2110.7
42.5°	2117.0	2091.5	2041.0	2009.0	1990.2
45°	1996.5	1974.3	1926.5	1891.8	1879.1
47.5°	1879.1	1856.8	1805.9	1770.9	1752.1
50°	1755.1	1739.3	1694.8	1650.4	1634.6
52.5°	1634.6	1612.3	1571.2	1536.2	1514.0
55°	1511.0	1491.8	1453.7	1415.7	1399.9
57.5°	1387.0	1371.2	1329.8	1291.8	1278.9
60°	1263.1	1250.7	1206.2	1171.2	1161.8
62.5°	1142.5	1120.3	1088.6	1057.1	1044.2
65°	1019.0	999.8	968.1	939.5	923.7
67.5°	892.0	875.9	847.5	825.4	812.6
70°	774.5	761.7	733.1	710.9	698.4
72.5°	653.9	641.1	625.3	603.1	593.7
75°	533.1	527.0	510.9	492.0	498.4
77.5°	425.3	412.6	406.1	396.7	387.3
80°	317.5	314.1	307.7	298.3	292.0
82.5°	215.8	215.8	212.8	200.0	200.0
85°	130.0	127.0	123.9	114.1	111.1
87.5°	57.2	50.8	44.5	35.1	31.7
90°	2.6	33.1	55.1	69.2	74.5
92.5°	69.2	58.1	66.3	71.8	74.5
95°	179.4	88.2	107.5	121.7	118.8
97.5°	323.1	96.8	140.7	149.2	151.8
100°	489.0	110.6	157.4	179.4	185.0
102.5°	671.1	665.8	163.0	193.2	201.7
105°	839.6	922.7	168.6	198.8	209.9
107.5°	1035.8	1104.7	174.2	204.3	215.5
110°	1223.7	1281.5	483.4	207.3	218.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1400.5	1450.0	1403.2	212.5	221.0
115°	1588.1	1635.0	1704.2	425.4	226.7
117.5°	1751.1	1806.3	1853.5	1458.2	734.7
120°	1933.5	1974.8	2024.7	2057.9	1684.9
122.5°	2088.0	2132.3	2187.7	2204.1	2207.1
125°	2245.4	2281.5	2334.0	2353.3	2361.5
127.5°	2389.1	2427.8	2469.5	2497.0	2499.6
130°	2524.5	2568.8	2599.0	2629.5	2626.9
132.5°	2662.6	2698.7	2728.8	2753.8	2751.2
135°	2778.7	2823.0	2847.6	2875.5	2869.9
137.5°	2900.1	2933.2	2961.1	2988.6	2980.4
140°	3018.9	3041.1	3071.3	3096.3	3082.5
142.5°	3118.5	3137.9	3173.6	3195.6	3181.8
145°	3223.5	3220.6	3267.4	3286.8	3273.0
147.5°	3314.4	3306.2	3353.1	3366.9	3356.0
150°	3402.9	3383.5	3427.8	3444.2	3430.5
152.5°	3477.3	3455.4	3496.7	3513.4	3494.1
155°	3549.1	3524.5	3557.7	3574.1	3552.2
157.5°	3607.2	3585.2	3610.2	3629.5	3607.2
160°	3657.1	3640.4	3657.1	3673.5	3654.1
162.5°	3701.1	3684.7	3698.4	3717.8	3692.9
165°	3739.7	3723.3	3731.5	3750.9	3731.5
167.5°	3770.3	3753.5	3762.1	3781.4	3756.5
170°	3795.1	3778.5	3784.0	3803.3	3778.5
172.5°	3811.5	3795.1	3800.8	3820.1	3795.1
175°	3825.3	3806.0	3811.5	3831.0	3803.3
177.5°	3831.0	3811.5	3814.6	3833.9	3809.0
180°	3817.2	3817.2	3817.2	3817.2	3817.2

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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	9.51	10.31	10.52	11.33	12.70	9.06	9.86	10.08	10.89	12.26
	3H	11.17	11.89	12.19	12.92	14.31	10.68	11.40	11.70	12.43	13.82
	4H	11.76	12.44	12.79	13.47	14.87	11.26	11.94	12.30	12.98	14.37
	6H	12.16	12.78	13.20	13.82	15.23	11.66	12.28	12.70	13.32	14.73
	8H	12.26	12.86	13.31	13.91	15.32	11.76	12.36	12.81	13.41	14.82
	12H	12.31	12.88	13.37	13.93	15.35	11.80	12.37	12.86	13.42	14.85
4H	2H	9.96	10.64	11.01	11.68	13.08	9.61	10.29	10.65	11.32	12.72
	3H	11.83	12.39	12.88	13.46	14.87	11.42	11.99	12.47	13.05	14.46
	4H	12.54	13.06	13.60	14.12	15.55	12.12	12.64	13.18	13.69	15.13
	6H	13.06	13.51	14.13	14.58	16.01	12.63	13.07	13.69	14.15	15.58
	8H	13.21	13.63	14.28	14.70	16.14	12.77	13.19	13.84	14.26	15.70
	12H	13.28	13.66	14.37	14.74	16.19	12.83	13.21	13.92	14.29	15.74
8H	4H	12.73	13.15	13.80	14.22	15.67	12.36	12.78	13.43	13.85	15.29
	6H	13.37	13.71	14.46	14.83	16.27	12.98	13.33	14.08	14.44	15.88
	8H	13.59	13.89	14.69	14.99	16.45	13.20	13.50	14.30	14.60	16.06
	12H	13.72	13.99	14.83	15.08	16.58	13.31	13.58	14.41	14.67	16.17
12H	4H	12.72	13.09	13.80	14.18	15.63	12.35	12.73	13.44	13.81	15.26
	6H	13.40	13.70	14.50	14.80	16.26	13.03	13.33	14.13	14.43	15.88
	8H	13.64	13.91	14.74	15.00	16.50	13.26	13.53	14.36	14.62	16.12