

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: P920533

Luminaire Tested: DFN2DIP-SQ4F0-120D090US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920533
REPORT IS A COMBINATION OF REPORTS P901645 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D090US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

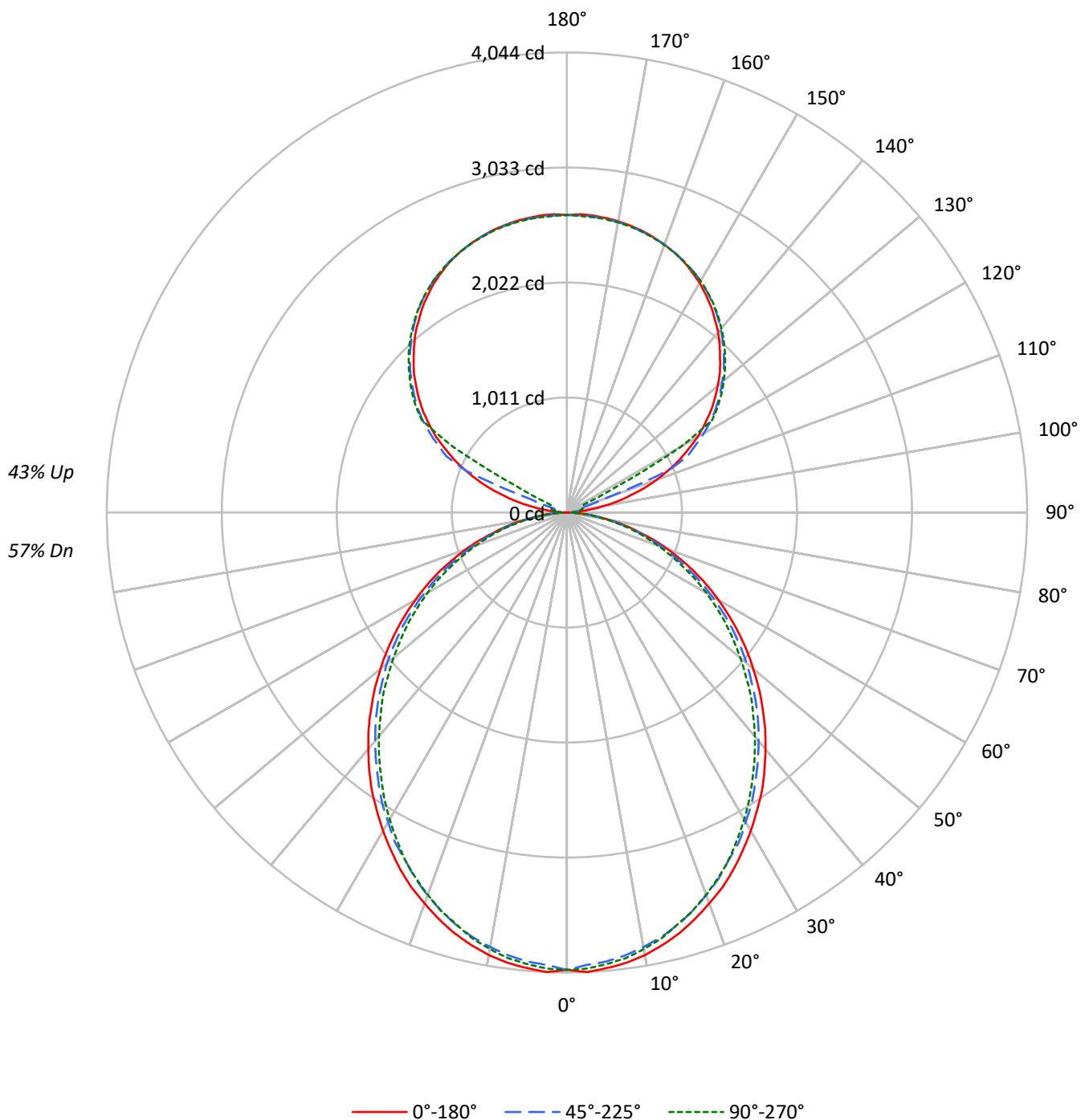
Lumens per Lamp: N/A
Luminaire Lumens: 17900.1 lumens
Efficiency: N/A
Efficacy: 97.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 184.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	63	63	63
1	99	95	91	88	92	89	85	82	77	74	72	66	64	62	55	54	53
2	91	83	77	72	84	77	72	67	67	63	59	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	43	40	38
4	76	65	57	50	70	61	53	48	53	47	43	45	41	38	39	35	33
5	69	58	49	43	64	54	47	41	47	41	37	41	36	33	35	31	29
6	64	52	44	38	59	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	31	39	33	28	34	29	25	29	25	22
8	55	43	35	29	51	40	33	28	35	29	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	25	21	18
10	48	36	28	24	45	34	27	22	30	24	20	26	22	18	23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2821	2821	2821
5°	2825	2782	2801
10°	2802	2745	2764
15°	2761	2701	2706
20°	2705	2638	2646
25°	2650	2564	2576
30°	2581	2494	2488
35°	2515	2413	2394
40°	2434	2330	2305
45°	2353	2247	2214
50°	2265	2160	2109
55°	2172	2060	2012
60°	2067	1940	1902
65°	1954	1817	1771
70°	1808	1667	1631
75°	1607	1487	1502
80°	1365	1257	1255
85°	987	860	843

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2353 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	378.4	2.1
10°-20°	1064.6	5.9
20°-30°	1564.6	8.7
30°-40°	1817.2	10.2
40°-50°	1814.9	10.1
50°-60°	1582.5	8.8
60°-70°	1169.9	6.5
70°-80°	661.9	3.7
80°-90°	179.3	1.0
90°-100°	86.2	0.5
100°-110°	321.5	1.8
110°-120°	852.6	4.8
120°-130°	1414.1	7.9
130°-140°	1502.1	8.4
140°-150°	1396.0	7.8
150°-160°	1122.4	6.3
160°-170°	723.2	4.0
170°-180°	248.9	1.4
0°-30°	3007.6	16.8
0°-40°	4824.8	27.0
0°-60°	8222.2	45.9
0°-90°	10233.3	57.2
90°-120°	1260.3	7.0
90°-150°	5572.4	31.1
90°-180°	7667.0	42.8
0°-180°	17900.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4020	4020	4020	4020	4020	
5°	4020	4005	3962	3993	3986	382
15°	3827	3804	3754	3769	3750	1078
25°	3464	3433	3367	3375	3367	1594
35°	2988	2950	2888	2864	2845	1866
45°	2432	2405	2346	2304	2289	1877
55°	1840	1817	1771	1724	1705	1645
65°	1241	1218	1179	1144	1125	1227
75°	649	642	622	599	607	693
85°	158	155	151	139	135	177
90°	2	23	38	47	51	17
95°	123	60	74	83	81	146
105°	575	632	116	136	144	615
115°	1088	1120	1168	291	155	1071
125°	1538	1563	1599	1612	1618	1372
135°	1904	1934	1951	1970	1966	1471
145°	2208	2206	2239	2252	2242	1381
155°	2432	2415	2437	2449	2434	1121
165°	2562	2551	2557	2570	2557	724
175°	2621	2608	2611	2625	2606	249
180°	2615	2615	2615	2615	2615	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4020.3	4020.3	4020.3	4020.3	4020.3
2.5°	4043.6	4024.3	3981.7	4020.3	4012.9
5°	4020.3	4005.0	3962.4	3993.1	3985.7
7.5°	3993.1	3970.1	3927.5	3958.7	3950.9
10°	3950.9	3923.8	3877.5	3908.2	3896.8
12.5°	3892.7	3869.7	3823.3	3842.6	3834.8
15°	3827.0	3804.1	3753.6	3769.2	3749.9
17.5°	3745.9	3722.9	3672.4	3691.7	3672.4
20°	3656.8	3633.8	3579.8	3591.2	3576.1
22.5°	3568.2	3533.4	3482.9	3482.9	3475.2
25°	3463.6	3432.9	3367.3	3374.7	3367.3
27.5°	3347.6	3320.5	3270.5	3259.0	3239.8
30°	3231.9	3200.8	3142.9	3131.4	3115.9
32.5°	3108.0	3085.1	3023.1	2999.8	2984.2
35°	2988.3	2949.8	2887.8	2864.5	2845.2
37.5°	2852.9	2818.1	2756.1	2729.1	2709.8
40°	2714.0	2682.8	2620.8	2586.4	2570.8
42.5°	2578.6	2547.4	2485.9	2447.0	2424.0
45°	2431.7	2404.7	2346.4	2304.2	2288.6
47.5°	2288.6	2261.5	2199.6	2157.0	2134.0
50°	2137.7	2118.4	2064.2	2010.1	1990.8
52.5°	1990.8	1963.8	1913.7	1871.0	1844.0
55°	1840.3	1817.0	1770.6	1724.2	1704.9
57.5°	1689.4	1670.1	1619.6	1573.3	1557.7
60°	1538.4	1523.3	1469.1	1426.5	1415.0
62.5°	1391.6	1364.5	1326.0	1287.5	1271.9
65°	1241.1	1217.7	1179.1	1144.3	1125.1
67.5°	1086.5	1066.8	1032.3	1005.3	989.7
70°	943.3	927.7	892.9	865.8	850.7
72.5°	796.5	780.9	761.6	734.6	723.1
75°	649.3	641.9	622.2	599.3	607.0
77.5°	518.0	502.4	494.6	483.1	471.7
80°	386.8	382.6	374.9	363.4	355.6
82.5°	262.9	262.9	259.2	243.7	243.7
85°	158.3	154.6	150.9	139.1	135.3
87.5°	69.7	61.9	54.2	42.6	38.6
90°	1.8	22.7	37.7	47.4	51.0
92.5°	47.4	39.8	45.4	49.2	51.0
95°	123.0	60.4	73.7	83.3	81.4
97.5°	221.4	66.3	96.4	102.2	104.0
100°	335.0	75.8	107.9	123.0	126.7
102.5°	459.8	456.2	111.7	132.3	138.2
105°	575.2	632.1	115.5	136.2	143.8
107.5°	709.6	756.8	119.3	140.0	147.7
110°	838.4	878.0	331.2	142.0	149.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	959.5	993.4	961.3	145.6	151.4
115°	1088.0	1120.2	1167.6	291.4	155.2
117.5°	1199.7	1237.5	1269.8	999.1	503.3
120°	1324.6	1353.0	1387.2	1409.8	1154.3
122.5°	1430.5	1460.9	1498.8	1510.0	1512.1
125°	1538.3	1563.1	1599.0	1612.3	1617.9
127.5°	1636.8	1663.3	1691.9	1710.7	1712.5
130°	1729.6	1760.0	1780.6	1801.5	1799.7
132.5°	1824.2	1848.9	1869.6	1886.7	1884.9
135°	1903.8	1934.1	1950.9	1970.0	1966.3
137.5°	1986.9	2009.6	2028.7	2047.5	2041.9
140°	2068.2	2083.5	2104.2	2121.2	2111.9
142.5°	2136.6	2149.8	2174.3	2189.3	2180.0
145°	2208.5	2206.4	2238.6	2251.9	2242.4
147.5°	2270.7	2265.1	2297.2	2306.7	2299.2
150°	2331.4	2318.2	2348.5	2359.7	2350.3
152.5°	2382.4	2367.3	2395.6	2407.1	2393.8
155°	2431.6	2414.8	2437.4	2448.7	2433.6
157.5°	2471.4	2456.3	2473.4	2486.6	2471.4
160°	2505.5	2494.1	2505.5	2516.8	2503.5
162.5°	2535.6	2524.4	2533.8	2547.1	2530.0
165°	2562.2	2550.9	2556.6	2569.8	2556.6
167.5°	2583.1	2571.6	2577.4	2590.7	2573.6
170°	2600.1	2588.7	2592.5	2605.7	2588.7
172.5°	2611.4	2600.1	2603.9	2617.2	2600.1
175°	2620.8	2607.5	2611.4	2624.6	2605.7
177.5°	2624.6	2611.4	2613.4	2626.6	2609.6
180°	2615.2	2615.2	2615.2	2615.2	2615.2

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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	11.52	12.45	12.42	13.37	14.53	11.08	12.01	11.97	12.92	14.09
	3H	13.19	14.03	14.10	14.95	16.14	12.70	13.54	13.61	14.46	15.65
	4H	13.79	14.58	14.71	15.50	16.70	13.29	14.08	14.21	15.01	16.21
	6H	14.19	14.92	15.13	15.86	17.07	13.69	14.42	14.63	15.36	16.57
	8H	14.30	15.00	15.24	15.95	17.16	13.80	14.49	14.74	15.45	16.66
	12H	14.36	15.02	15.30	15.96	17.20	13.85	14.51	14.79	15.45	16.69
4H	2H	11.99	12.78	12.92	13.71	14.91	11.64	12.43	12.56	13.36	14.56
	3H	13.87	14.53	14.81	15.49	16.70	13.46	14.12	14.40	15.08	16.29
	4H	14.59	15.19	15.54	16.15	17.39	14.17	14.77	15.11	15.72	16.96
	6H	15.11	15.63	16.07	16.61	17.85	14.68	15.20	15.64	16.18	17.42
	8H	15.27	15.75	16.23	16.72	17.98	14.83	15.32	15.79	16.29	17.54
	12H	15.35	15.78	16.33	16.77	18.03	14.90	15.33	15.88	16.32	17.58
8H	4H	14.79	15.28	15.76	16.25	17.50	14.42	14.90	15.38	15.87	17.13
	6H	15.43	15.83	16.42	16.85	18.10	15.05	15.45	16.04	16.46	17.71
	8H	15.66	16.01	16.65	17.01	18.28	15.26	15.62	16.26	16.62	17.89
	12H	15.80	16.11	16.79	17.10	18.42	15.38	15.70	16.38	16.69	18.01
12H	4H	14.78	15.22	15.76	16.21	17.47	14.42	14.85	15.40	15.84	17.10
	6H	15.46	15.82	16.46	16.82	18.09	15.09	15.45	16.09	16.45	17.72
	8H	15.71	16.02	16.71	17.02	18.33	15.33	15.64	16.33	16.64	17.95