

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: P904165

Luminaire Tested: DFN2DIP-SQ4F0-120D090US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904165
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-SQ4F0-120D090US830-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

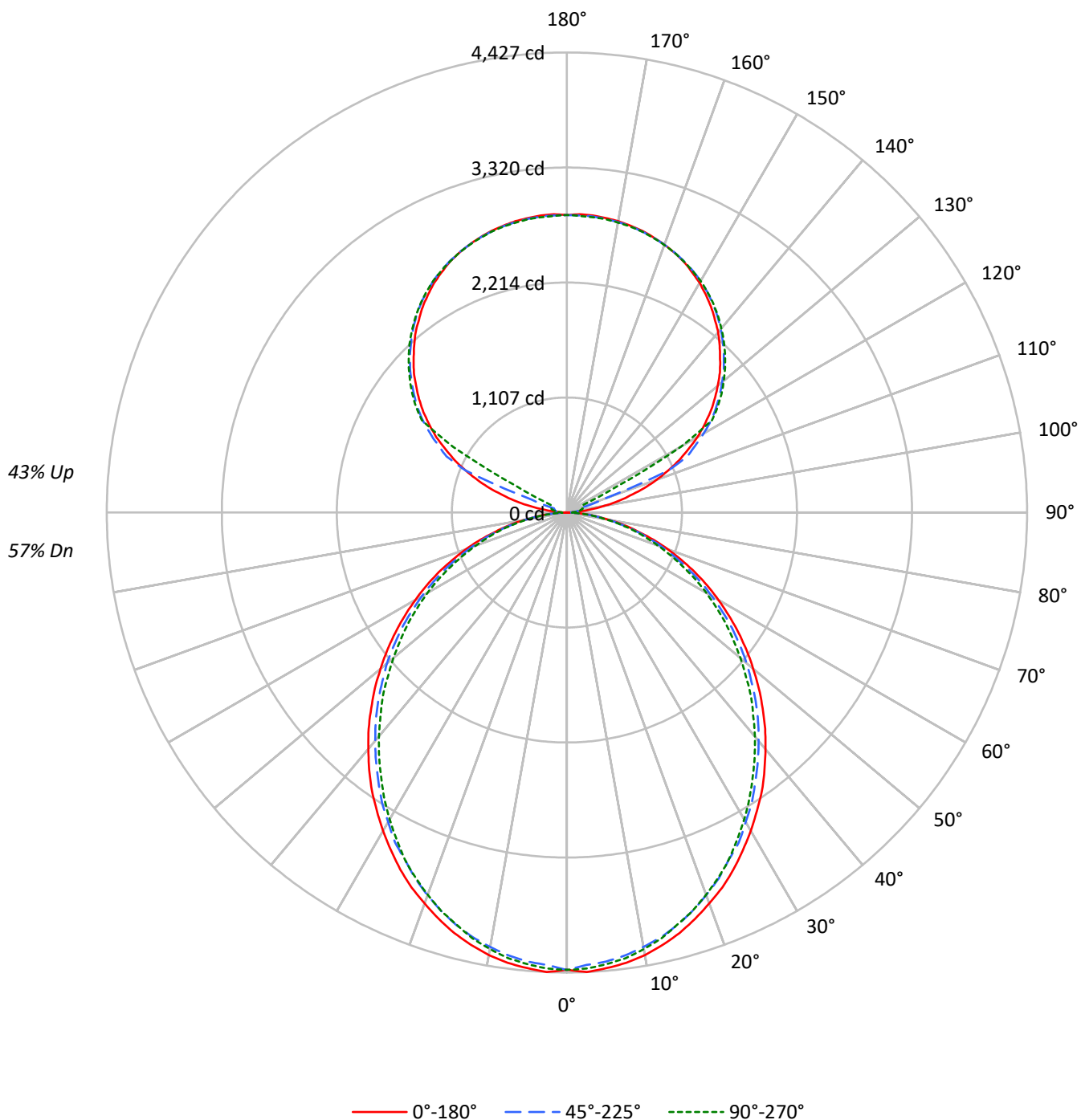
Lumens per Lamp: N/A
Luminaire Lumens: 19595.4 lumens
Efficiency: N/A
Efficacy: 106.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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

TEST NUMBER: P904165

CATALOG NUMBER: DFN2DIP-SQ4F0-120D090US830-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P904165

CATALOG NUMBER: DFN2DIP-SQ4F0-120D090US830-FLONL

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	32	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°	3088	3088	3088
5°	3093	3046	3066
10°	3068	3005	3026
15°	3023	2956	2962
20°	2962	2888	2896
25°	2901	2807	2820
30°	2825	2731	2724
35°	2753	2641	2621
40°	2664	2551	2524
45°	2576	2460	2424
50°	2479	2365	2309
55°	2378	2255	2203
60°	2263	2124	2082
65°	2139	1989	1939
70°	1980	1824	1785
75°	1759	1627	1645
80°	1494	1376	1374
85°	1080	941	924

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2576 cd/sqm

TEST NUMBER: P904165

CATALOG NUMBER: DFN2DIP-SQ4F0-120D090US830-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	414.2	2.1
10°-20°	1165.5	5.9
20°-30°	1712.8	8.7
30°-40°	1989.3	10.2
40°-50°	1986.8	10.1
50°-60°	1732.4	8.8
60°-70°	1280.6	6.5
70°-80°	724.6	3.7
80°-90°	196.3	1.0
90°-100°	94.4	0.5
100°-110°	351.9	1.8
110°-120°	933.3	4.8
120°-130°	1548.0	7.9
130°-140°	1644.3	8.4
140°-150°	1528.2	7.8
150°-160°	1228.6	6.3
160°-170°	791.7	4.0
170°-180°	272.5	1.4
0°-30°	3292.4	16.8
0°-40°	5281.7	27.0
0°-60°	9000.9	45.9
0°-90°	11202.4	57.2
90°-120°	1379.6	7.0
90°-150°	6100.2	31.1
90°-180°	8393.0	42.8
0°-180°	19595.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4401	4401	4401	4401	4401	
5°	4401	4384	4338	4371	4363	418
15°	4190	4164	4109	4126	4105	1180
25°	3792	3758	3686	3694	3686	1745
35°	3271	3229	3161	3136	3115	2043
45°	2662	2632	2569	2522	2505	2054
55°	2015	1989	1938	1888	1866	1801
65°	1359	1333	1291	1253	1232	1343
75°	711	703	681	656	664	759
85°	173	169	165	152	148	193
90°	2	25	41	52	56	18
95°	135	66	81	91	89	159
105°	630	692	126	149	157	673
115°	1191	1226	1278	319	170	1173
125°	1684	1711	1750	1765	1771	1502
135°	2084	2117	2136	2157	2152	1610
145°	2418	2415	2451	2465	2455	1512
155°	2662	2644	2668	2681	2664	1227
165°	2805	2792	2799	2813	2799	792
175°	2869	2854	2859	2873	2852	273
180°	2863	2863	2863	2863	2863	

TEST NUMBER: P904165

CATALOG NUMBER: DFN2DIP-SQ4F0-120D090US830-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4401.0	4401.0	4401.0	4401.0	4401.0
2.5°	4426.6	4405.4	4358.8	4401.0	4392.9
5°	4401.0	4384.3	4337.7	4371.3	4363.2
7.5°	4371.3	4346.2	4299.5	4333.6	4325.1
10°	4325.1	4295.4	4244.7	4278.4	4265.9
12.5°	4261.3	4236.2	4185.5	4206.6	4198.0
15°	4189.5	4164.3	4109.1	4126.2	4105.1
17.5°	4100.6	4075.5	4020.2	4041.3	4020.2
20°	4003.2	3978.0	3918.8	3931.3	3914.8
22.5°	3906.2	3868.0	3812.8	3812.8	3804.3
25°	3791.7	3758.0	3686.2	3694.3	3686.2
27.5°	3664.6	3635.0	3580.2	3567.6	3546.6
30°	3538.0	3503.9	3440.6	3428.0	3411.0
32.5°	3402.4	3377.3	3309.5	3283.9	3266.9
35°	3271.3	3229.1	3161.3	3135.7	3114.6
37.5°	3123.1	3085.0	3017.2	2987.6	2966.5
40°	2971.0	2936.9	2869.0	2831.3	2814.2
42.5°	2822.8	2788.7	2721.3	2678.7	2653.5
45°	2662.0	2632.4	2568.6	2522.4	2505.4
47.5°	2505.4	2475.7	2407.9	2361.3	2336.1
50°	2340.1	2319.0	2259.7	2200.5	2179.3
52.5°	2179.3	2149.8	2095.0	2048.2	2018.6
55°	2014.6	1989.0	1938.2	1887.5	1866.4
57.5°	1849.4	1828.2	1773.0	1722.3	1705.2
60°	1684.1	1667.5	1608.3	1561.6	1549.0
62.5°	1523.4	1493.7	1451.6	1409.4	1392.3
65°	1358.7	1333.0	1290.8	1252.6	1231.6
67.5°	1189.4	1167.8	1130.1	1100.5	1083.5
70°	1032.6	1015.6	977.4	947.8	931.2
72.5°	871.9	854.9	833.8	804.2	791.5
75°	710.8	702.7	681.1	656.0	664.5
77.5°	567.0	550.0	541.5	528.9	516.3
80°	423.4	418.9	410.4	397.8	389.3
82.5°	287.8	287.8	283.8	266.7	266.7
85°	173.3	169.3	165.2	152.2	148.2
87.5°	76.3	67.8	59.3	46.7	42.2
90°	2.0	24.9	41.3	51.9	55.8
92.5°	51.9	43.5	49.7	53.9	55.8
95°	134.6	66.2	80.7	91.2	89.1
97.5°	242.3	72.6	105.6	111.9	113.9
100°	366.7	82.9	118.1	134.6	138.7
102.5°	503.3	499.4	122.2	144.9	151.3
105°	629.7	692.0	126.4	149.1	157.4
107.5°	776.8	828.5	130.6	153.3	161.6
110°	917.8	961.1	362.6	155.4	163.6



TEST NUMBER: P904165

CATALOG NUMBER: DFN2DIP-SQ4F0-120D090US830-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1050.4	1087.5	1052.3	159.4	165.8
115°	1191.1	1226.2	1278.2	319.1	169.9
117.5°	1313.3	1354.7	1390.1	1093.7	551.0
120°	1450.1	1481.1	1518.5	1543.3	1263.7
122.5°	1566.0	1599.2	1640.8	1653.0	1655.3
125°	1684.0	1711.1	1750.5	1765.0	1771.1
127.5°	1791.8	1820.8	1852.1	1872.7	1874.7
130°	1893.4	1926.7	1949.3	1972.1	1970.2
132.5°	1997.0	2024.0	2046.6	2065.4	2063.4
135°	2084.1	2117.2	2135.7	2156.6	2152.5
137.5°	2175.1	2199.9	2220.8	2241.5	2235.3
140°	2264.1	2280.9	2303.5	2322.1	2311.9
142.5°	2338.9	2353.4	2380.2	2396.7	2386.4
145°	2417.6	2415.4	2450.6	2465.1	2454.8
147.5°	2485.8	2479.6	2514.8	2525.2	2517.0
150°	2552.2	2537.7	2570.9	2583.1	2572.9
152.5°	2608.0	2591.5	2622.5	2635.1	2620.6
155°	2661.9	2643.5	2668.2	2680.6	2664.1
157.5°	2705.5	2689.0	2707.6	2722.2	2705.5
160°	2742.8	2730.3	2742.8	2755.1	2740.6
162.5°	2775.8	2763.4	2773.8	2788.3	2769.7
165°	2804.8	2792.5	2798.7	2813.2	2798.7
167.5°	2827.7	2815.2	2821.5	2836.0	2817.4
170°	2846.4	2833.8	2838.0	2852.5	2833.8
172.5°	2858.7	2846.4	2850.5	2865.0	2846.4
175°	2869.0	2854.5	2858.7	2873.2	2852.5
177.5°	2873.2	2858.7	2860.9	2875.4	2856.8
180°	2862.9	2862.9	2862.9	2862.9	2862.9

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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	11.84	12.77	12.73	13.68	14.85	11.39	12.32	12.29	13.24	14.40
	3H	13.51	14.34	14.41	15.27	16.46	13.02	13.85	13.92	14.77	15.96
	4H	14.10	14.89	15.02	15.82	17.02	13.61	14.40	14.53	15.32	16.52
	6H	14.51	15.24	15.44	16.17	17.38	14.01	14.74	14.94	15.67	16.88
	8H	14.62	15.31	15.56	16.26	17.47	14.12	14.81	15.06	15.76	16.97
	12H	14.67	15.33	15.61	16.27	17.51	14.16	14.82	15.11	15.77	17.00
4H	2H	12.31	13.10	13.23	14.03	15.22	11.95	12.74	12.88	13.67	14.87
	3H	14.19	14.84	15.12	15.80	17.02	13.78	14.44	14.71	15.39	16.61
	4H	14.91	15.51	15.85	16.46	17.70	14.48	15.08	15.43	16.04	17.28
	6H	15.43	15.95	16.39	16.92	18.16	15.00	15.52	15.96	16.49	17.73
	8H	15.58	16.07	16.54	17.04	18.29	15.15	15.63	16.11	16.60	17.85
	12H	15.66	16.10	16.64	17.09	18.34	15.21	15.65	16.19	16.64	17.90
8H	4H	15.11	15.59	16.07	16.56	17.82	14.73	15.22	15.69	16.19	17.44
	6H	15.75	16.15	16.73	17.16	18.41	15.36	15.77	16.35	16.78	18.03
	8H	15.97	16.33	16.97	17.33	18.60	15.58	15.93	16.58	16.93	18.20
	12H	16.11	16.42	17.11	17.42	18.73	15.70	16.01	16.70	17.00	18.32
12H	4H	15.10	15.53	16.08	16.52	17.78	14.73	15.17	15.71	16.15	17.41
	6H	15.78	16.13	16.77	17.13	18.40	15.41	15.76	16.40	16.76	18.03
	8H	16.03	16.34	17.03	17.33	18.65	15.65	15.96	16.65	16.95	18.27