

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: P912308

Luminaire Tested: DFN2DIP-SQ4F0-110D080US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912308
REPORT IS A COMBINATION OF REPORTS P900105 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D080US850-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

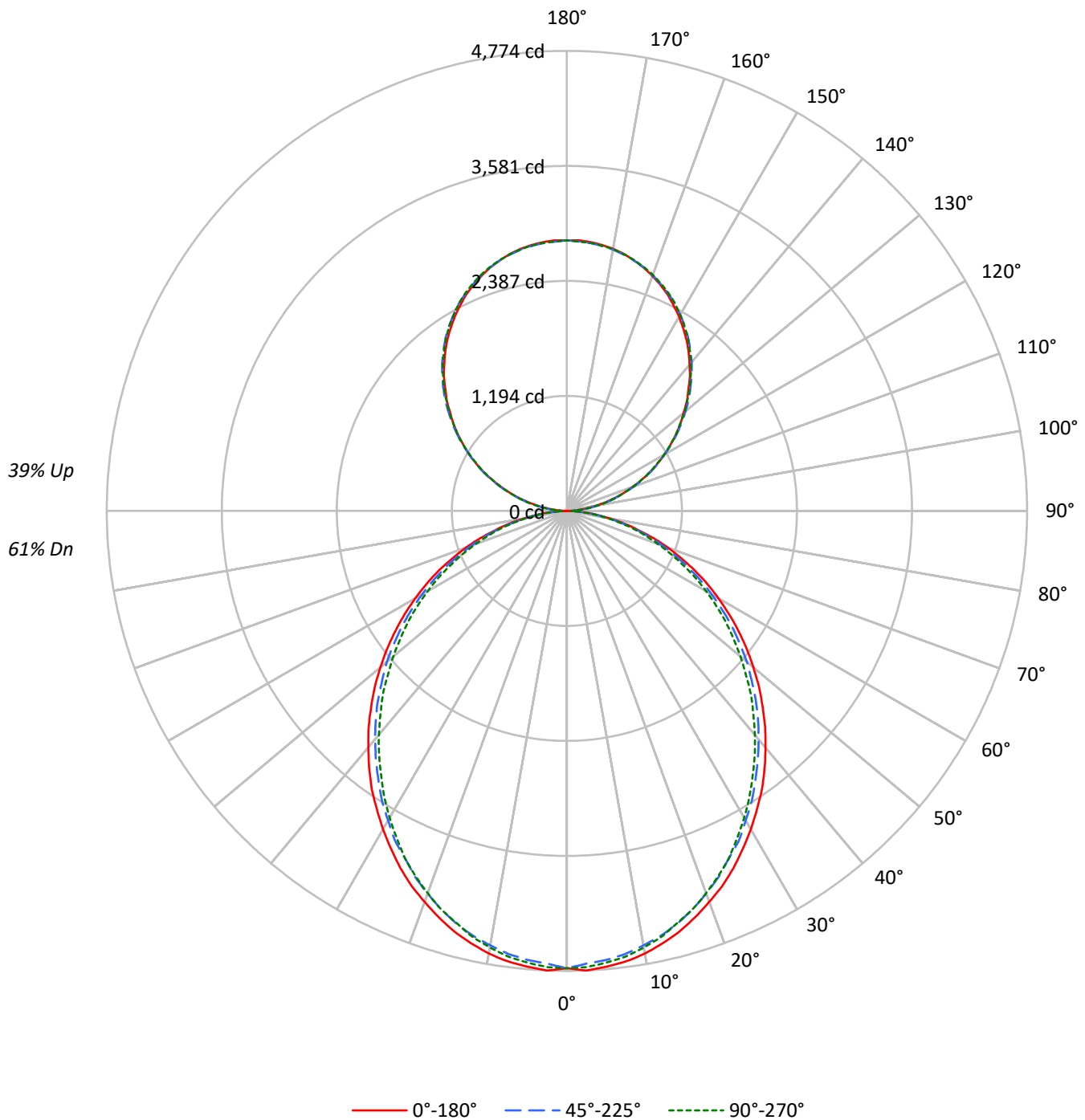
Lumens per Lamp: N/A
Luminaire Lumens: 19928.7 lumens
Efficiency: N/A
Efficacy: 121.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 164.6
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

TEST NUMBER: P912308

CATALOG NUMBER: DFN2DIP-SQ4F0-110D080US850-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P912308

CATALOG NUMBER: DFN2DIP-SQ4F0-110D080US850-FLLFL

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	110	110	110	110	103	103	103	103	89	89	89	77	77	77	66	66	66
1	100	96	92	88	94	90	86	83	78	76	73	68	66	64	58	57	56
2	91	84	77	72	85	78	73	68	69	64	61	60	56	54	51	49	47
3	83	74	66	60	78	69	62	57	61	55	51	53	49	45	45	42	40
4	76	65	57	51	71	61	54	48	54	48	44	47	43	39	41	37	34
5	70	58	50	44	65	55	47	42	48	42	38	42	38	34	37	33	30
6	65	52	44	38	60	49	42	36	44	38	33	38	33	30	33	29	26
7	60	47	39	33	56	45	37	32	40	34	29	35	30	26	30	27	24
8	55	43	35	30	52	41	33	28	36	30	26	32	27	24	28	24	21
9	52	39	32	26	48	37	30	25	33	27	23	29	25	21	26	22	19
10	48	36	29	24	45	34	27	23	31	25	21	27	23	19	24	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3331	3331	3331
5°	3336	3285	3307
10°	3309	3241	3263
15°	3260	3189	3194
20°	3194	3115	3124
25°	3129	3027	3042
30°	3047	2945	2937
35°	2969	2849	2827
40°	2873	2751	2722
45°	2778	2653	2615
50°	2674	2551	2490
55°	2565	2432	2376
60°	2441	2291	2245
65°	2307	2145	2091
70°	2135	1968	1925
75°	1897	1755	1774
80°	1612	1484	1482
85°	1165	1016	996

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2778 cd/sqm

TEST NUMBER: P912308

CATALOG NUMBER: DFN2DIP-SQ4F0-110D080US850-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	446.8	2.2
10°-20°	1257.0	6.3
20°-30°	1847.3	9.3
30°-40°	2145.5	10.8
40°-50°	2142.9	10.8
50°-60°	1868.5	9.4
60°-70°	1381.3	6.9
70°-80°	781.5	3.9
80°-90°	214.2	1.1
90°-100°	173.6	0.9
100°-110°	551.7	2.8
110°-120°	944.1	4.7
120°-130°	1241.6	6.2
130°-140°	1393.7	7.0
140°-150°	1366.6	6.9
150°-160°	1146.4	5.8
160°-170°	760.3	3.8
170°-180°	265.7	1.3
0°-30°	3551.1	17.8
0°-40°	5696.6	28.6
0°-60°	9708.0	48.7
0°-90°	12085.0	60.6
90°-120°	1669.4	8.4
90°-150°	5671.3	28.5
90°-180°	7844.0	39.4
0°-180°	19928.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4747	4747	4747	4747	4747	
5°	4747	4729	4678	4715	4706	451
15°	4519	4491	4432	4450	4428	1273
25°	4090	4053	3976	3984	3976	1882
35°	3528	3483	3410	3382	3359	2203
45°	2871	2839	2770	2721	2702	2216
55°	2173	2145	2091	2036	2013	1943
65°	1465	1438	1392	1351	1328	1449
75°	766	758	735	708	717	818
85°	187	182	178	164	160	209
90°	3	30	83	78	80	19
95°	124	147	151	151	147	137
105°	509	516	521	525	525	537
115°	947	961	957	954	947	937
125°	1378	1399	1392	1385	1382	1231
135°	1782	1809	1814	1811	1804	1378
145°	2164	2181	2194	2197	2188	1352
155°	2474	2481	2489	2500	2493	1139
165°	2692	2689	2689	2706	2694	759
175°	2801	2794	2789	2806	2792	266
180°	2806	2806	2806	2806	2806	

TEST NUMBER: P912308

CATALOG NUMBER: DFN2DIP-SQ4F0-110D080US850-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4746.7	4746.7	4746.7	4746.7	4746.7
2.5°	4774.2	4751.5	4701.2	4746.7	4738.0
5°	4746.7	4728.8	4678.4	4714.7	4706.0
7.5°	4714.7	4687.6	4637.3	4674.1	4664.9
10°	4664.9	4632.8	4578.2	4614.4	4600.9
12.5°	4596.1	4569.0	4514.3	4537.0	4527.8
15°	4518.6	4491.4	4431.9	4450.3	4427.6
17.5°	4422.7	4395.6	4336.1	4358.8	4336.1
20°	4317.7	4290.5	4226.6	4240.2	4222.3
22.5°	4213.1	4171.8	4112.3	4112.3	4103.1
25°	4089.5	4053.3	3975.8	3984.5	3975.8
27.5°	3952.5	3920.5	3861.4	3847.9	3825.2
30°	3816.0	3779.1	3710.8	3697.3	3678.9
32.5°	3669.7	3642.6	3569.4	3541.8	3523.4
35°	3528.3	3482.8	3409.6	3382.0	3359.3
37.5°	3368.5	3327.3	3254.2	3222.2	3199.5
40°	3204.3	3167.5	3094.4	3053.7	3035.3
42.5°	3044.5	3007.7	2935.1	2889.1	2862.0
45°	2871.2	2839.2	2770.4	2720.6	2702.2
47.5°	2702.2	2670.3	2597.1	2546.7	2519.5
50°	2524.0	2501.2	2437.2	2373.4	2350.6
52.5°	2350.6	2318.6	2259.6	2209.1	2177.2
55°	2172.9	2145.2	2090.6	2035.8	2013.1
57.5°	1994.6	1971.9	1912.4	1857.6	1839.2
60°	1816.4	1798.6	1734.6	1684.2	1670.7
62.5°	1643.1	1611.2	1565.6	1520.1	1501.7
65°	1465.3	1437.7	1392.2	1351.1	1328.4
67.5°	1282.8	1259.6	1218.9	1187.0	1168.6
70°	1113.8	1095.4	1054.2	1022.3	1004.3
72.5°	940.4	922.0	899.3	867.3	853.7
75°	766.5	757.9	734.6	707.5	716.7
77.5°	611.6	593.2	584.0	570.5	556.9
80°	456.7	451.8	442.6	429.1	419.9
82.5°	310.4	310.4	306.1	287.7	287.7
85°	187.0	182.5	178.2	164.1	159.8
87.5°	82.3	73.1	63.9	50.3	45.5
90°	2.6	30.5	83.0	77.9	80.4
92.5°	52.5	71.1	73.6	76.1	76.1
95°	123.5	147.2	151.4	151.4	147.2
97.5°	205.6	227.6	236.9	236.9	236.9
100°	300.3	319.7	326.5	326.5	323.9
102.5°	400.1	414.5	423.7	426.3	423.7
105°	509.3	516.0	521.1	525.3	525.3
107.5°	617.5	627.7	627.7	629.4	617.5
110°	722.4	735.9	735.9	735.9	729.2

TEST NUMBER: P912308

CATALOG NUMBER: DFN2DIP-SQ4F0-110D080US850-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	835.7	850.2	847.6	840.8	835.7
115°	947.4	960.9	956.7	954.2	947.4
117.5°	1058.2	1076.8	1065.0	1058.2	1051.4
120°	1169.9	1188.5	1169.9	1169.9	1162.2
122.5°	1271.4	1295.1	1283.2	1276.5	1271.4
125°	1377.9	1399.1	1392.3	1384.7	1382.3
127.5°	1482.1	1508.2	1498.9	1488.8	1482.1
130°	1579.3	1609.7	1605.5	1600.5	1591.2
132.5°	1688.5	1712.1	1713.8	1702.0	1695.2
135°	1782.3	1808.6	1813.7	1811.1	1804.3
137.5°	1887.2	1908.4	1912.6	1910.9	1900.7
140°	1979.5	2000.5	2012.4	2012.4	2003.1
142.5°	2074.2	2095.3	2102.1	2104.7	2095.3
145°	2163.9	2180.7	2194.3	2196.8	2187.5
147.5°	2244.2	2265.4	2275.4	2279.8	2270.5
150°	2327.1	2341.4	2350.7	2358.4	2350.7
152.5°	2400.7	2415.1	2426.9	2436.3	2426.9
155°	2474.3	2481.1	2488.7	2500.5	2492.9
157.5°	2537.7	2542.8	2547.0	2563.9	2552.1
160°	2594.4	2599.5	2602.0	2616.4	2606.3
162.5°	2646.9	2646.9	2649.4	2665.5	2653.6
165°	2691.7	2689.1	2689.1	2706.1	2694.2
167.5°	2732.2	2724.7	2724.7	2741.6	2729.7
170°	2762.7	2756.0	2753.4	2770.4	2756.0
172.5°	2783.9	2777.2	2774.6	2791.5	2777.2
175°	2800.8	2794.0	2788.9	2805.9	2791.5
177.5°	2810.1	2803.3	2798.2	2812.6	2798.2
180°	2805.9	2805.9	2805.9	2805.9	2805.9

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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	12.39	13.36	13.25	14.24	15.35	11.95	12.91	12.81	13.79	14.91
	3H	14.06	14.93	14.94	15.82	16.96	13.57	14.44	14.45	15.33	16.47
	4H	14.66	15.48	15.55	16.38	17.52	14.16	14.98	15.05	15.88	17.03
	6H	15.07	15.82	15.97	16.73	17.89	14.57	15.32	15.47	16.23	17.39
	8H	15.18	15.90	16.09	16.82	17.98	14.68	15.40	15.58	16.32	17.48
	12H	15.23	15.92	16.15	16.83	18.02	14.72	15.41	15.64	16.32	17.51
4H	2H	12.87	13.68	13.76	14.58	15.73	12.51	13.33	13.40	14.23	15.37
	3H	14.75	15.43	15.65	16.36	17.52	14.34	15.02	15.24	15.95	17.11
	4H	15.47	16.09	16.38	17.02	18.20	15.04	15.67	15.96	16.59	17.78
	6H	15.99	16.53	16.92	17.48	18.67	15.56	16.10	16.49	17.05	18.24
	8H	16.15	16.65	17.08	17.59	18.80	15.71	16.21	16.64	17.16	18.36
	12H	16.23	16.68	17.18	17.64	18.85	15.78	16.23	16.73	17.19	18.40
8H	4H	15.67	16.18	16.60	17.12	18.32	15.30	15.80	16.23	16.74	17.94
	6H	16.31	16.73	17.27	17.71	18.92	15.93	16.35	16.89	17.33	18.53
	8H	16.54	16.91	17.51	17.88	19.10	16.15	16.51	17.11	17.49	18.71
	12H	16.68	17.00	17.65	17.97	19.24	16.27	16.59	17.24	17.56	18.83
12H	4H	15.66	16.12	16.62	17.08	18.29	15.30	15.75	16.25	16.71	17.92
	6H	16.34	16.71	17.31	17.69	18.91	15.97	16.34	16.94	17.32	18.54
	8H	16.59	16.92	17.57	17.89	19.15	16.21	16.54	17.19	17.51	18.77