

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: P909617

Luminaire Tested: DFN2DIP-SQ4F0-120D080US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909617
REPORT IS A COMBINATION OF REPORTS P901627 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D080US840-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

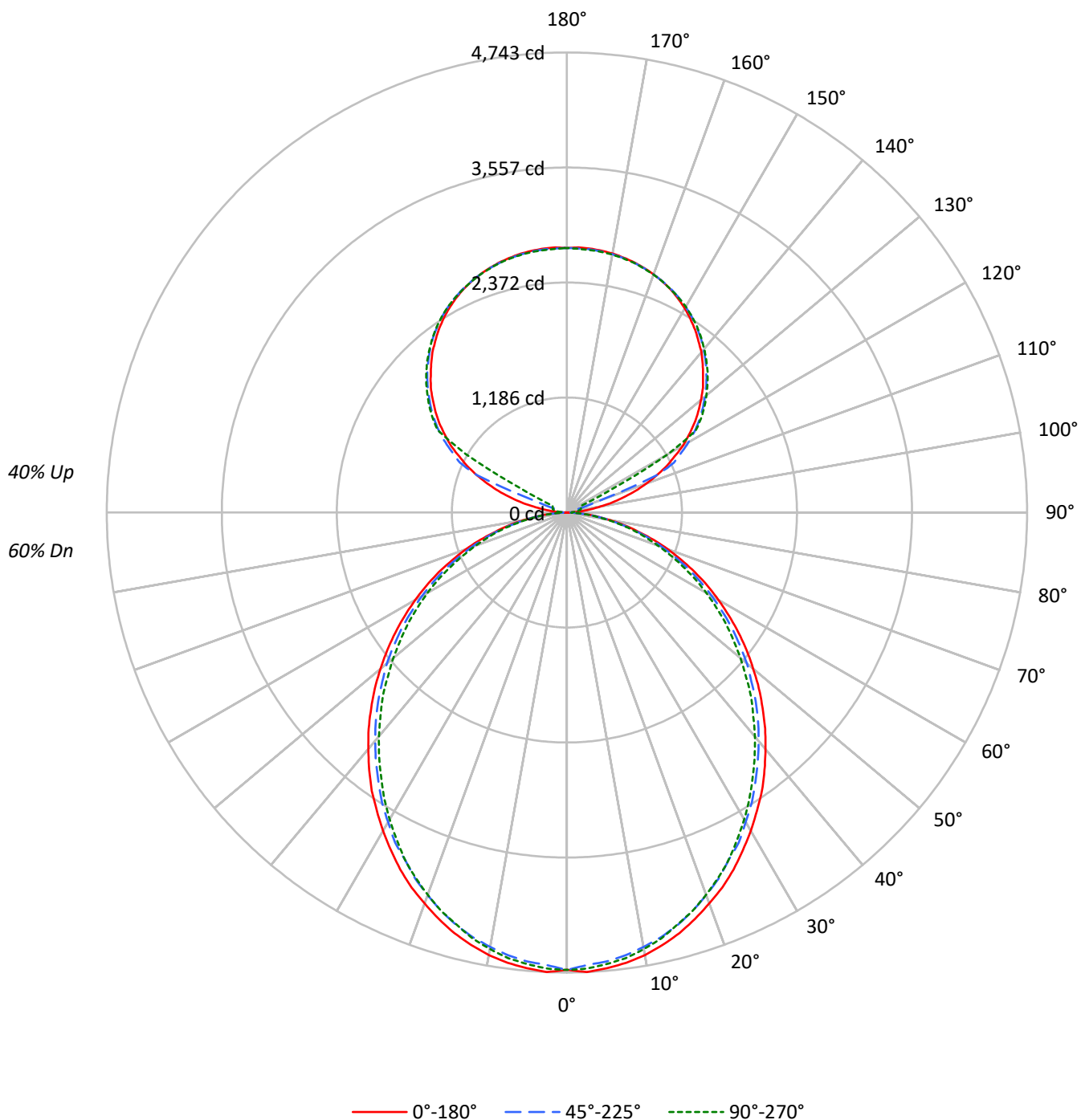
Lumens per Lamp: N/A
Luminaire Lumens: 19995.3 lumens
Efficiency: N/A
Efficacy: 112.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 177.1
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: P909617

CATALOG NUMBER: DFN2DIP-SQ4F0-120D080US840-FLLONL

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
RCR																	
0	110	110	110	110	102	102	102	102	89	89	89		77	77	77		65
1	100	96	92	88	93	90	86	83	78	75	73		67	66	64		58
2	91	84	77	72	85	78	73	68	68	64	61		59	56	53		51
3	83	73	66	60	77	69	62	57	60	55	51		52	48	45		45
4	76	65	57	51	71	61	54	48	54	48	44		47	42	39		40
5	70	58	50	44	65	55	47	42	48	42	38		42	37	34		36
6	64	52	44	38	60	49	42	36	43	37	33		38	33	30		33
7	60	47	39	33	56	44	37	32	39	33	29		35	30	26		30
8	55	43	35	30	52	40	33	28	36	30	26		32	27	23		28
9	52	39	32	26	48	37	30	25	33	27	23		29	24	21		26
10	48	36	29	24	45	34	27	23	30	25	21		27	22	19		24

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3309	3309	3309
5°	3314	3263	3285
10°	3287	3220	3242
15°	3239	3168	3173
20°	3173	3095	3103
25°	3108	3007	3022
30°	3027	2926	2918
35°	2950	2830	2808
40°	2855	2733	2704
45°	2760	2636	2597
50°	2656	2534	2474
55°	2548	2416	2360
60°	2425	2276	2230
65°	2291	2131	2077
70°	2121	1955	1913
75°	1885	1743	1762
80°	1601	1475	1472
85°	1157	1009	990

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2760 cd/sqm

TEST NUMBER: P909617

CATALOG NUMBER: DFN2DIP-SQ4F0-120D080US840-FLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	443.8	2.2
10°-20°	1248.7	6.2
20°-30°	1835.1	9.2
30°-40°	2131.4	10.7
40°-50°	2128.7	10.6
50°-60°	1856.2	9.3
60°-70°	1372.1	6.9
70°-80°	776.3	3.9
80°-90°	209.7	1.0
90°-100°	89.9	0.4
100°-110°	335.1	1.7
110°-120°	888.9	4.4
120°-130°	1474.3	7.4
130°-140°	1566.0	7.8
140°-150°	1455.4	7.3
150°-160°	1170.1	5.9
160°-170°	754.0	3.8
170°-180°	259.5	1.3
0°-30°	3527.6	17.6
0°-40°	5659.0	28.3
0°-60°	9643.8	48.2
0°-90°	12002.0	60.0
90°-120°	1314.0	6.6
90°-150°	5809.7	29.1
90°-180°	7993.0	40.0
0°-180°	19995.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4715	4715	4715	4715	4715	
5°	4715	4698	4648	4684	4675	448
15°	4489	4462	4403	4421	4398	1264
25°	4062	4026	3950	3958	3950	1869
35°	3505	3460	3387	3360	3337	2189
45°	2852	2820	2752	2703	2684	2201
55°	2158	2131	2077	2022	2000	1930
65°	1456	1428	1383	1342	1320	1439
75°	762	753	730	703	712	813
85°	186	181	177	163	159	207
90°	2	24	39	49	53	18
95°	128	63	77	87	85	152
105°	600	659	120	142	150	641
115°	1134	1168	1217	304	162	1117
125°	1604	1630	1667	1681	1687	1430
135°	1985	2016	2034	2054	2050	1533
145°	2302	2300	2334	2348	2338	1440
155°	2535	2518	2541	2553	2537	1168
165°	2671	2660	2665	2679	2665	755
175°	2732	2719	2723	2736	2717	260
180°	2726	2726	2726	2726	2726	

TEST NUMBER: P909617

CATALOG NUMBER: DFN2DIP-SQ4F0-120D080US840-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4715.4	4715.4	4715.4	4715.4	4715.4
2.5°	4742.7	4720.1	4670.1	4715.4	4706.7
5°	4715.4	4697.5	4647.5	4683.6	4674.9
7.5°	4683.6	4656.6	4606.6	4643.2	4634.1
10°	4634.1	4602.3	4547.9	4584.0	4570.6
12.5°	4565.7	4538.7	4484.4	4507.0	4497.8
15°	4488.8	4461.8	4402.6	4420.9	4398.3
17.5°	4393.5	4366.6	4307.4	4330.0	4307.4
20°	4289.1	4262.1	4198.7	4212.1	4194.4
22.5°	4185.2	4144.3	4085.1	4085.1	4076.0
25°	4062.5	4026.4	3949.5	3958.2	3949.5
27.5°	3926.4	3894.6	3836.0	3822.4	3799.9
30°	3790.7	3754.2	3686.3	3672.9	3654.6
32.5°	3645.4	3618.6	3545.8	3518.5	3500.2
35°	3504.9	3459.8	3387.1	3359.7	3337.1
37.5°	3346.2	3305.4	3232.7	3201.0	3178.3
40°	3183.2	3146.6	3073.9	3033.5	3015.3
42.5°	3024.4	2987.9	2915.7	2870.0	2843.1
45°	2852.2	2820.5	2752.1	2702.6	2684.3
47.5°	2684.3	2652.5	2579.9	2529.9	2503.0
50°	2507.3	2484.7	2421.2	2357.6	2335.0
52.5°	2335.0	2303.3	2244.6	2194.5	2162.8
55°	2158.5	2131.1	2076.7	2022.4	1999.7
57.5°	1981.5	1958.8	1899.7	1845.3	1827.0
60°	1804.4	1786.7	1723.1	1673.1	1659.6
62.5°	1632.2	1600.4	1555.3	1510.1	1491.8
65°	1455.7	1428.3	1383.0	1342.1	1319.6
67.5°	1274.3	1251.2	1210.8	1179.1	1160.8
70°	1106.4	1088.1	1047.2	1015.5	997.7
72.5°	934.2	915.9	893.3	861.6	848.1
75°	761.5	752.9	729.7	702.9	712.0
77.5°	607.5	589.3	580.2	566.6	553.2
80°	453.6	448.8	439.7	426.3	417.1
82.5°	308.3	308.3	304.1	285.8	285.8
85°	185.7	181.4	177.0	163.1	158.8
87.5°	81.8	72.6	63.5	50.0	45.2
90°	1.9	23.6	39.4	49.4	53.2
92.5°	49.4	41.5	47.4	51.3	53.2
95°	128.2	63.0	76.9	86.9	84.8
97.5°	230.8	69.1	100.5	106.6	108.5
100°	349.3	79.0	112.5	128.2	132.1
102.5°	479.4	475.5	116.4	137.9	144.1
105°	599.8	659.0	120.4	142.0	150.0
107.5°	739.8	789.0	124.4	145.9	153.9
110°	874.1	915.3	345.4	148.0	155.8

TEST NUMBER: P909617

CATALOG NUMBER: DFN2DIP-SQ4F0-120D080US840-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1000.4	1035.7	1002.3	151.8	157.9
115°	1134.4	1167.9	1217.3	303.9	161.9
117.5°	1250.8	1290.2	1323.9	1041.6	524.8
120°	1381.1	1410.6	1446.2	1469.9	1203.5
122.5°	1491.4	1523.1	1562.7	1574.4	1576.5
125°	1603.9	1629.6	1667.1	1680.9	1686.8
127.5°	1706.5	1734.1	1763.9	1783.5	1785.4
130°	1803.2	1834.8	1856.4	1878.2	1876.3
132.5°	1901.9	1927.6	1949.2	1967.0	1965.1
135°	1984.8	2016.4	2034.0	2054.0	2049.9
137.5°	2071.5	2095.2	2115.1	2134.8	2128.9
140°	2156.3	2172.2	2193.8	2211.6	2201.7
142.5°	2227.6	2241.3	2266.8	2282.6	2272.7
145°	2302.5	2300.4	2333.9	2347.7	2337.8
147.5°	2367.4	2361.6	2395.0	2404.9	2397.1
150°	2430.6	2416.8	2448.4	2460.1	2450.3
152.5°	2483.9	2468.1	2497.6	2509.6	2495.8
155°	2535.2	2517.6	2541.2	2552.9	2537.3
157.5°	2576.6	2560.9	2578.7	2592.5	2576.6
160°	2612.2	2600.3	2612.2	2623.9	2610.1
162.5°	2643.6	2631.9	2641.7	2655.5	2637.8
165°	2671.3	2659.6	2665.4	2679.2	2665.4
167.5°	2693.0	2681.1	2687.2	2701.0	2683.2
170°	2710.9	2698.9	2702.9	2716.7	2698.9
172.5°	2722.6	2710.9	2714.8	2728.7	2710.9
175°	2732.4	2718.6	2722.6	2736.3	2716.7
177.5°	2736.3	2722.6	2724.6	2738.5	2720.7
180°	2726.5	2726.5	2726.5	2726.5	2726.5

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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	12.32	13.28	13.18	14.17	15.29	11.87	12.83	12.74	13.72	14.84
	3H	13.99	14.85	14.87	15.75	16.89	13.50	14.36	14.38	15.26	16.40
	4H	14.59	15.40	15.48	16.30	17.46	14.09	14.91	14.99	15.81	16.96
	6H	14.99	15.74	15.90	16.65	17.82	14.49	15.24	15.40	16.15	17.32
	8H	15.10	15.82	16.02	16.75	17.91	14.60	15.32	15.52	16.24	17.41
	12H	15.16	15.84	16.08	16.76	17.95	14.65	15.33	15.57	16.25	17.44
4H	2H	12.79	13.61	13.69	14.51	15.66	12.44	13.25	13.34	14.15	15.31
	3H	14.67	15.35	15.58	16.28	17.46	14.26	14.94	15.17	15.88	17.05
	4H	15.39	16.01	16.31	16.94	18.14	14.97	15.59	15.89	16.52	17.72
	6H	15.92	16.45	16.85	17.41	18.60	15.49	16.02	16.42	16.97	18.17
	8H	16.07	16.57	17.01	17.52	18.73	15.63	16.13	16.57	17.08	18.29
	12H	16.15	16.60	17.11	17.57	18.79	15.70	16.15	16.66	17.12	18.34
8H	4H	15.60	16.10	16.54	17.05	18.26	15.22	15.72	16.16	16.67	17.88
	6H	16.24	16.65	17.20	17.64	18.85	15.85	16.27	16.82	17.26	18.47
	8H	16.46	16.83	17.44	17.81	19.04	16.07	16.44	17.04	17.42	18.64
	12H	16.60	16.92	17.58	17.90	19.17	16.19	16.51	17.17	17.49	18.76
12H	4H	15.59	16.04	16.55	17.00	18.22	15.22	15.67	16.18	16.64	17.85
	6H	16.27	16.64	17.24	17.61	18.84	15.90	16.26	16.87	17.24	18.47
	8H	16.52	16.84	17.50	17.81	19.09	16.14	16.46	17.12	17.43	18.71