

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: P912326

Luminaire Tested: DFN2DIP-SQ4F0-110D120US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

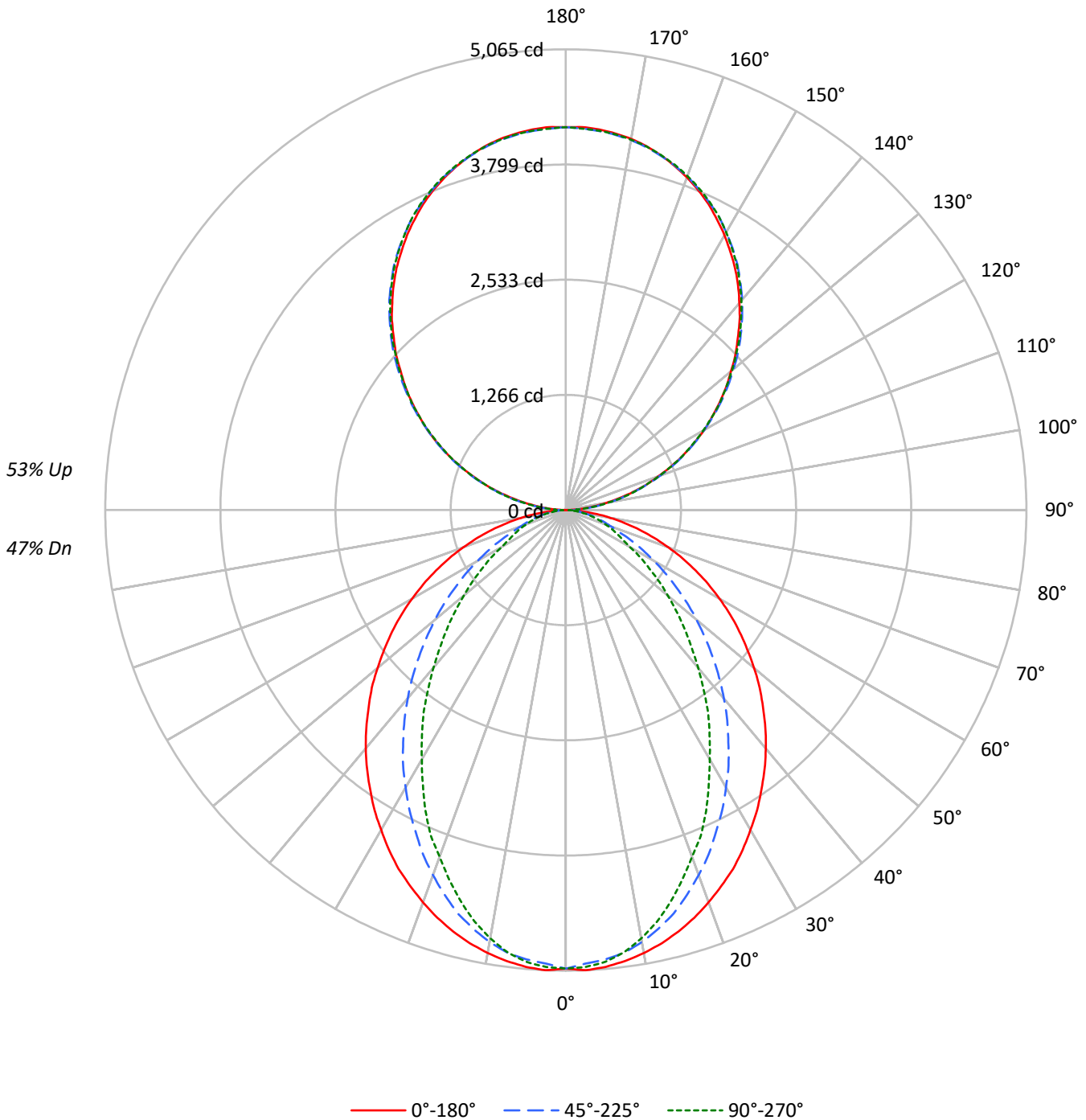
Test Method: LM-79-2019  
Report Number: P912326  
REPORT IS A COMBINATION OF REPORTS P900178 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-110D120US850-RLLFLL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22146.7 lumens  
Efficiency: N/A  
Efficacy: 113.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 195.2  
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

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20				20
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	106	106	106	106	98	98	98	98	82	82	82	67	67	67	53	53	53	47	47	47	47
1	98	93	90	86	90	86	83	80	72	70	68	59	58	57	48	47	46	40	40	40	40
2	89	82	76	71	82	76	71	66	64	60	57	53	50	48	43	41	39	35	35	35	35
3	82	73	65	60	75	67	61	56	57	52	48	47	44	41	38	36	34	30	30	30	30
4	75	64	57	51	69	60	53	48	51	46	42	42	39	36	34	32	30	26	26	26	26
5	69	58	50	44	63	53	47	41	45	40	36	38	34	31	31	28	26	23	23	23	23
6	64	52	44	38	58	48	41	36	41	36	32	35	31	27	28	26	23	20	20	20	20
7	59	47	39	34	54	44	37	32	37	32	28	32	27	24	26	23	21	18	18	18	18
8	55	43	35	30	50	40	33	28	34	29	25	29	25	22	24	21	19	16	16	16	16
9	51	39	32	27	47	36	30	25	31	26	23	27	23	20	22	19	17	15	15	15	15
10	48	36	29	24	44	34	27	23	29	24	20	25	21	18	21	18	16	14	14	14	14

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	3538	3538	3538
5°	3543	3482	3505
10°	3508	3415	3392
15°	3460	3303	3216
20°	3396	3148	3001
25°	3330	2974	2793
30°	3243	2796	2528
35°	3156	2604	2296
40°	3069	2405	2029
45°	2967	2185	1788
50°	2862	1963	1552
55°	2752	1725	1325
60°	2624	1476	1092
65°	2478	1223	984
70°	2301	988	892
75°	2078	872	814
80°	1755	734	709
85°	1222	494	540

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 3312 cd/sqm



TEST NUMBER: P912326

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	472.5	2.1
10°-20°	1297.2	5.9
20°-30°	1821.2	8.2
30°-40°	1985.2	9.0
40°-50°	1824.6	8.2
50°-60°	1433.0	6.5
60°-70°	932.7	4.2
70°-80°	480.1	2.2
80°-90°	134.5	0.6
90°-100°	260.4	1.2
100°-110°	827.5	3.7
110°-120°	1416.1	6.4
120°-130°	1862.4	8.4
130°-140°	2090.5	9.4
140°-150°	2050.0	9.3
150°-160°	1719.6	7.8
160°-170°	1140.4	5.1
170°-180°	398.6	1.8
0°-30°	3590.9	16.2
0°-40°	5576.1	25.2
0°-60°	8833.7	39.9
0°-90°	10381.1	46.9
90°-120°	2504.0	11.3
90°-150°	8506.9	38.4
90°-180°	11766.0	53.1
0°-180°	22146.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5042	5042	5042	5042	5042	
5°	5042	5019	4960	5001	4987	478
15°	4795	4745	4590	4504	4458	1351
25°	4353	4207	3906	3719	3650	2002
35°	3751	3518	3117	2829	2728	2348
45°	3066	2760	2282	1957	1848	2368
55°	2331	1976	1483	1209	1123	2083
65°	1574	1204	794	639	625	1561
75°	839	520	365	333	329	888
85°	196	100	87	87	87	225
90°	4	46	124	117	120	22
95°	185	221	227	227	221	206
105°	764	774	782	788	788	806
115°	1421	1442	1435	1431	1421	1406
125°	2067	2099	2089	2077	2073	1847
135°	2674	2713	2720	2717	2706	2066
145°	3246	3271	3291	3295	3281	2028
155°	3711	3722	3733	3751	3739	1708
165°	4038	4034	4034	4059	4041	1139
175°	4201	4191	4184	4209	4187	399
180°	4209	4209	4209	4209	4209	



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CATALOG NUMBER: DFN2DIP-SQ4F0-110D120US850-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5041.8	5041.8	5041.8	5041.8	5041.8
2.5°	5064.6	5041.8	4991.5	5037.5	5028.3
5°	5041.8	5019.1	4959.6	5000.7	4987.2
7.5°	5000.7	4973.5	4909.7	4927.6	4904.8
10°	4946.0	4914.0	4823.0	4809.0	4781.9
12.5°	4877.7	4836.6	4713.1	4686.0	4635.6
15°	4795.4	4745.1	4590.2	4503.5	4458.0
17.5°	4699.6	4626.5	4434.8	4334.5	4261.4
20°	4590.2	4498.7	4270.6	4156.9	4056.2
22.5°	4471.6	4366.5	4101.7	3946.8	3878.5
25°	4352.9	4206.8	3905.7	3718.8	3650.1
27.5°	4211.6	4056.2	3723.1	3508.7	3403.6
30°	4061.0	3887.3	3522.3	3289.8	3166.4
32.5°	3914.9	3704.7	3331.0	3057.1	2942.8
35°	3750.7	3517.9	3116.6	2829.1	2728.4
37.5°	3591.1	3339.8	2915.7	2600.5	2486.8
40°	3422.0	3148.6	2705.6	2381.7	2263.1
42.5°	3248.7	2956.8	2496.0	2158.1	2044.3
45°	3066.3	2760.3	2281.5	1957.2	1847.8
47.5°	2892.9	2569.1	2076.3	1751.9	1651.7
50°	2701.2	2377.4	1875.4	1560.3	1464.9
52.5°	2513.9	2171.6	1683.7	1382.6	1295.9
55°	2331.3	1975.6	1482.7	1209.3	1122.6
57.5°	2144.6	1779.5	1305.1	1049.6	976.4
60°	1952.8	1587.9	1117.8	885.4	812.3
62.5°	1766.0	1401.0	958.1	739.3	702.9
65°	1574.2	1204.4	793.9	639.0	624.9
67.5°	1391.8	1021.9	639.0	561.0	547.5
70°	1200.0	844.3	529.1	483.6	465.2
72.5°	1017.5	679.7	442.5	406.1	396.9
75°	839.4	519.9	365.0	333.0	328.7
77.5°	661.7	369.4	287.6	269.2	259.9
80°	497.2	264.8	218.8	201.0	201.0
82.5°	346.6	178.1	150.6	141.4	141.4
85°	196.1	100.3	86.6	86.6	86.6
87.5°	73.1	36.3	36.3	31.9	31.9
90°	3.8	45.7	124.3	116.8	120.5
92.5°	78.6	106.6	110.3	114.2	114.2
95°	185.2	220.8	227.1	227.1	220.8
97.5°	308.3	341.4	355.3	355.3	355.3
100°	450.5	479.6	489.7	489.7	486.0
102.5°	600.2	621.7	635.7	639.6	635.7
105°	763.9	774.0	781.6	787.9	787.9
107.5°	926.2	941.5	941.5	944.0	926.2
110°	1083.6	1103.9	1103.9	1103.9	1093.8



TEST NUMBER: P912326

CATALOG NUMBER: DFN2DIP-SQ4F0-110D120US850-RLFL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1253.6	1275.2	1271.4	1261.3	1253.6
115°	1421.1	1441.5	1435.0	1431.3	1421.1
117.5°	1587.3	1615.3	1597.5	1587.3	1577.2
120°	1754.9	1782.7	1754.9	1754.9	1743.5
122.5°	1907.1	1942.6	1924.9	1914.7	1907.1
125°	2067.0	2098.7	2088.6	2077.2	2073.3
127.5°	2223.1	2262.4	2248.4	2233.2	2223.1
130°	2368.9	2414.6	2408.3	2400.7	2386.7
132.5°	2532.6	2568.2	2570.7	2552.9	2542.8
135°	2673.5	2712.8	2720.5	2716.6	2706.5
137.5°	2830.8	2862.6	2868.9	2866.3	2851.1
140°	2969.1	3000.8	3018.6	3018.6	3004.6
142.5°	3111.3	3143.0	3153.1	3156.9	3143.0
145°	3245.7	3271.1	3291.4	3295.3	3281.3
147.5°	3366.3	3398.0	3413.3	3419.6	3405.6
150°	3490.7	3512.2	3526.2	3537.6	3526.2
152.5°	3601.0	3622.5	3640.4	3654.4	3640.4
155°	3711.4	3721.6	3733.0	3750.7	3739.3
157.5°	3806.6	3814.2	3820.5	3845.9	3828.2
160°	3891.6	3899.2	3903.0	3924.6	3909.3
162.5°	3970.2	3970.2	3974.1	3998.2	3980.4
165°	4037.5	4033.8	4033.8	4059.1	4041.3
167.5°	4098.4	4087.0	4087.0	4112.4	4094.6
170°	4144.1	4133.9	4130.1	4155.5	4133.9
172.5°	4175.8	4165.6	4161.9	4187.3	4165.6
175°	4201.2	4191.0	4183.5	4208.8	4187.3
177.5°	4215.2	4205.0	4197.3	4219.0	4197.3
180°	4208.8	4208.8	4208.8	4208.8	4208.8



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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	11.25	12.05	12.24	13.05	14.37	7.21	8.01	8.20	9.01	10.33
	3H	12.93	13.65	13.93	14.65	15.99	8.40	9.12	9.40	10.12	11.46
	4H	13.54	14.22	14.55	15.23	16.58	8.85	9.53	9.86	10.54	11.88
	6H	13.96	14.59	14.99	15.60	16.96	9.17	9.79	10.19	10.81	12.17
	8H	14.09	14.69	15.12	15.72	17.07	9.26	9.85	10.29	10.88	12.24
	12H	14.15	14.72	15.19	15.74	17.12	9.30	9.87	10.33	10.89	12.27
4H	2H	11.26	11.94	12.28	12.95	14.30	7.80	8.49	8.82	9.49	10.84
	3H	13.10	13.66	14.12	14.70	16.06	9.15	9.72	10.18	10.76	12.12
	4H	13.79	14.31	14.82	15.34	16.72	9.70	10.22	10.74	11.25	12.63
	6H	14.31	14.75	15.35	15.81	17.19	10.12	10.56	11.16	11.62	13.00
	8H	14.48	14.90	15.53	15.95	17.34	10.25	10.66	11.29	11.71	13.10
	12H	14.58	14.96	15.65	16.02	17.42	10.31	10.69	11.38	11.75	13.15
8H	4H	13.76	14.17	14.80	15.22	16.61	9.98	10.40	11.03	11.44	12.84
	6H	14.33	14.67	15.39	15.76	17.15	10.50	10.84	11.57	11.93	13.32
	8H	14.54	14.85	15.62	15.92	17.33	10.69	10.99	11.77	12.07	13.48
	12H	14.69	14.95	15.77	16.02	17.47	10.81	11.08	11.89	12.14	13.60
12H	4H	13.71	14.08	14.77	15.14	16.54	9.99	10.36	11.05	11.42	12.82
	6H	14.30	14.60	15.38	15.68	17.09	10.55	10.85	11.63	11.92	13.34
	8H	14.52	14.79	15.60	15.86	17.31	10.76	11.03	11.84	12.09	13.55