

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: P913004

Luminaire Tested: DFN2DIP-TR4F0-110D100US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

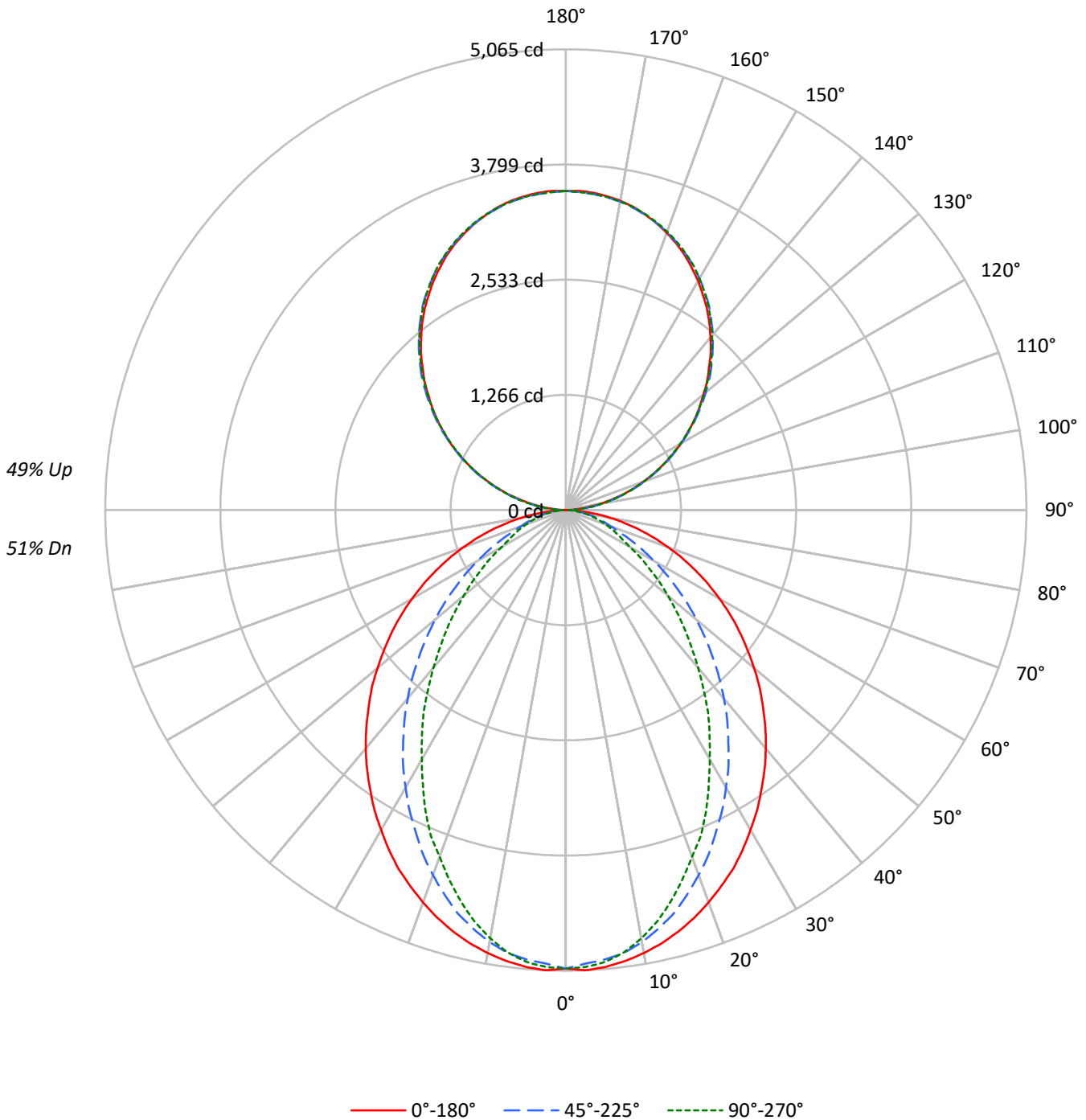
Test Method: LM-79-2019  
Report Number: P913004  
REPORT IS A COMBINATION OF REPORTS P900492 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-110D100US850-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 20183.8 lumens  
Efficiency: N/A  
Efficacy: 106.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 189  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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			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	107	107	107	107	99	99	99	99	84	84	84	70	70	70	57	57	57	57	57	57	51
1	99	94	91	87	91	87	84	81	74	72	70	63	61	59	52	50	49	52	50	49	44
2	90	83	77	72	83	77	72	68	66	62	59	56	53	50	46	44	42	46	44	42	38
3	83	73	66	61	76	68	62	57	59	54	50	50	46	43	41	39	37	41	39	37	33
4	76	65	58	52	70	61	54	49	52	47	43	44	41	37	37	34	32	37	34	32	28
5	70	58	51	45	64	55	48	42	47	42	38	40	36	33	34	31	28	34	31	28	25
6	64	53	45	39	59	49	42	37	43	37	33	36	32	29	31	28	25	31	28	25	22
7	60	48	40	34	55	45	38	33	39	33	29	33	29	26	28	25	23	28	25	23	20
8	55	43	36	31	51	41	34	29	36	30	26	31	26	23	26	23	20	26	23	20	18
9	52	40	32	27	48	37	31	26	33	27	24	28	24	21	24	21	18	24	21	18	16
10	48	37	29	25	45	34	28	24	30	25	21	26	22	19	22	19	17	22	19	17	15

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

	0°	45°	90°
0°	4005	4005	4005
5°	4012	3942	3967
10°	3972	3864	3838
15°	3917	3737	3638
20°	3845	3561	3393
25°	3771	3363	3157
30°	3672	3161	2857
35°	3574	2943	2593
40°	3475	2718	2291
45°	3360	2468	2017
50°	3241	2216	1750
55°	3116	1947	1493
60°	2973	1665	1229
65°	2807	1378	1105
70°	2606	1111	1000
75°	2354	980	910
80°	1989	822	789
85°	1387	548	592

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3360 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	472.5	2.3
10°-20°	1297.2	6.4
20°-30°	1821.2	9.0
30°-40°	1985.2	9.8
40°-50°	1824.6	9.0
50°-60°	1433.0	7.1
60°-70°	932.7	4.6
70°-80°	480.1	2.4
80°-90°	132.5	0.7
90°-100°	217.0	1.1
100°-110°	689.6	3.4
110°-120°	1180.1	5.8
120°-130°	1552.0	7.7
130°-140°	1742.1	8.6
140°-150°	1708.3	8.5
150°-160°	1433.0	7.1
160°-170°	950.4	4.7
170°-180°	332.2	1.6
0°-30°	3590.9	17.8
0°-40°	5576.1	27.6
0°-60°	8833.7	43.8
0°-90°	10379.1	51.4
90°-120°	2086.7	10.3
90°-150°	7089.1	35.1
90°-180°	9805.0	48.6
0°-180°	20183.8	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°	3	38	104	97	100	20
95°	154	184	189	189	184	172
105°	637	645	651	657	657	672
115°	1184	1201	1196	1193	1184	1171
125°	1722	1749	1740	1731	1728	1539
135°	2228	2261	2267	2264	2255	1722
145°	2705	2726	2743	2746	2734	1690
155°	3093	3101	3111	3126	3116	1424
165°	3365	3361	3361	3383	3368	949
175°	3501	3493	3486	3507	3489	333
180°	3507	3507	3507	3507	3507	



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CATALOG NUMBER: DFN2DIP-TR4F0-110D100US850-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°	3.2	38.0	103.6	97.3	100.5
92.5°	65.5	88.8	92.0	95.2	95.2
95°	154.4	184.0	189.3	189.3	184.0
97.5°	257.0	284.5	296.1	296.1	296.1
100°	375.4	399.7	408.1	408.1	405.0
102.5°	500.2	518.1	529.8	532.9	529.8
105°	636.6	645.0	651.3	656.6	656.6
107.5°	771.9	784.6	784.6	786.7	771.9
110°	903.1	919.9	919.9	919.9	911.5



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CATALOG NUMBER: DFN2DIP-TR4F0-110D100US850-RLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1044.7	1062.6	1059.5	1051.0	1044.7
115°	1184.3	1201.2	1195.9	1192.7	1184.3
117.5°	1322.8	1346.1	1331.2	1322.8	1314.3
120°	1462.3	1485.6	1462.3	1462.3	1452.9
122.5°	1589.2	1618.8	1604.1	1595.6	1589.2
125°	1722.5	1748.9	1740.5	1730.9	1727.8
127.5°	1852.6	1885.3	1873.7	1861.0	1852.6
130°	1974.1	2012.2	2007.0	2000.5	1989.0
132.5°	2110.5	2140.1	2142.3	2127.5	2119.0
135°	2227.9	2260.7	2267.0	2263.9	2255.4
137.5°	2359.1	2385.5	2390.8	2388.7	2375.9
140°	2474.3	2500.7	2515.5	2515.5	2503.9
142.5°	2592.7	2619.1	2627.6	2630.8	2619.1
145°	2704.7	2725.9	2742.9	2746.0	2734.4
147.5°	2805.2	2831.7	2844.4	2849.7	2838.0
150°	2908.9	2926.9	2938.5	2947.9	2938.5
152.5°	3000.8	3018.8	3033.7	3045.3	3033.7
155°	3092.9	3101.3	3110.9	3125.6	3116.1
157.5°	3172.2	3178.5	3183.8	3204.9	3190.1
160°	3243.0	3249.4	3252.5	3270.4	3257.8
162.5°	3308.6	3308.6	3311.7	3331.8	3317.0
165°	3364.6	3361.4	3361.4	3382.6	3367.8
167.5°	3415.4	3405.8	3405.8	3427.0	3412.2
170°	3453.4	3445.0	3441.8	3463.0	3445.0
172.5°	3479.8	3471.4	3468.2	3489.4	3471.4
175°	3501.0	3492.6	3486.3	3507.3	3489.4
177.5°	3512.6	3504.2	3497.8	3515.8	3497.8
180°	3507.3	3507.3	3507.3	3507.3	3507.3



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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	12.09	12.94	13.05	13.90	15.15	8.07	8.91	9.02	9.87	11.13
	3H	13.77	14.53	14.74	15.50	16.77	9.26	10.01	10.22	10.98	12.26
	4H	14.38	15.09	15.36	16.07	17.35	9.71	10.42	10.69	11.40	12.68
	6H	14.80	15.46	15.79	16.44	17.74	10.03	10.69	11.02	11.67	12.97
	8H	14.93	15.55	15.92	16.55	17.84	10.12	10.75	11.12	11.74	13.04
	12H	14.99	15.58	15.99	16.58	17.89	10.17	10.76	11.17	11.75	13.07
4H	2H	12.11	12.83	13.10	13.80	15.09	8.66	9.38	9.65	10.35	11.64
	3H	13.94	14.54	14.94	15.54	16.84	10.02	10.61	11.01	11.61	12.91
	4H	14.64	15.18	15.64	16.18	17.50	10.57	11.11	11.57	12.10	13.43
	6H	15.15	15.62	16.16	16.64	17.96	10.99	11.45	12.00	12.47	13.79
	8H	15.33	15.76	16.34	16.78	18.11	11.12	11.55	12.13	12.56	13.90
	12H	15.42	15.81	16.45	16.84	18.18	11.18	11.57	12.21	12.60	13.94
8H	4H	14.61	15.04	15.62	16.05	17.39	10.85	11.28	11.86	12.29	13.63
	6H	15.17	15.53	16.21	16.59	17.92	11.37	11.72	12.40	12.78	14.11
	8H	15.39	15.70	16.43	16.75	18.10	11.56	11.87	12.60	12.92	14.27
	12H	15.53	15.80	16.57	16.84	18.24	11.68	11.96	12.73	12.99	14.39
12H	4H	14.56	14.95	15.59	15.98	17.32	10.85	11.24	11.88	12.27	13.61
	6H	15.15	15.46	16.19	16.51	17.86	11.42	11.73	12.46	12.77	14.13
	8H	15.37	15.65	16.42	16.68	18.08	11.63	11.91	12.68	12.94	14.34