

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: P912828

Luminaire Tested: DFN2DIP-TR4F0-060D110US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

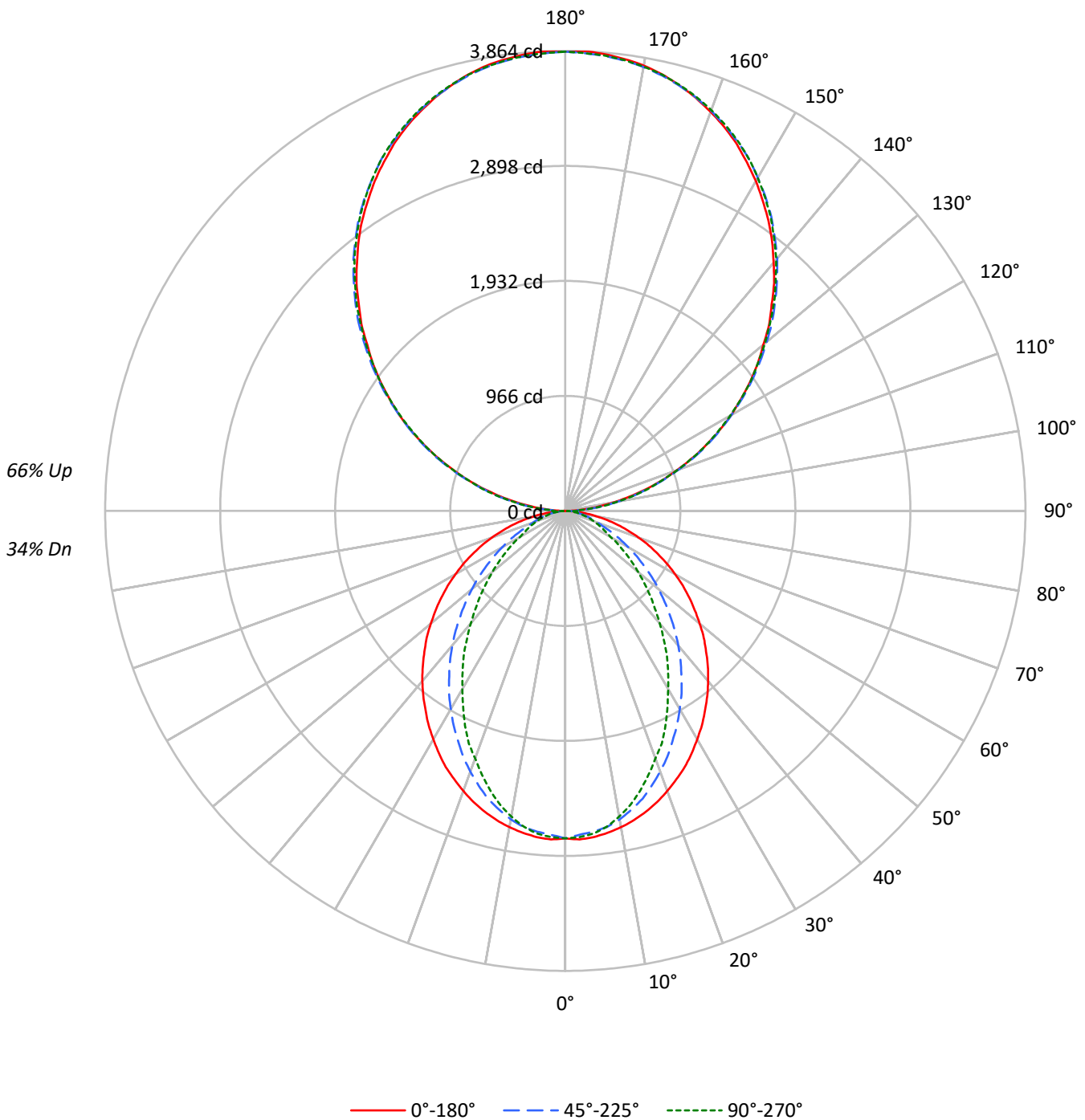
Test Method: LM-79-2019  
Report Number: P912828  
REPORT IS A COMBINATION OF REPORTS P900500 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-060D110US850-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16452.0 lumens  
Efficiency: N/A  
Efficacy: 119.1 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: Semi-Indirect  
  
Input Watts (W): 138.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
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	0
RCR																		
0	103	103	103	103	93	93	93	93	75	75	75	58	58	58	42	42	42	34
1	95	91	87	84	85	82	79	76	66	64	62	51	50	48	37	37	36	30
2	86	79	74	69	78	72	67	63	58	55	52	45	43	41	33	32	31	25
3	79	70	63	58	71	64	58	53	51	47	44	40	37	35	30	28	27	22
4	72	62	55	49	65	56	50	45	46	41	38	36	33	30	27	25	23	19
5	66	55	48	42	60	50	44	39	41	36	32	32	29	26	24	22	20	17
6	61	50	42	36	55	45	39	34	37	32	28	29	26	23	22	20	18	15
7	57	45	37	32	51	41	34	30	34	29	25	27	23	21	20	18	16	13
8	53	41	33	28	47	37	31	26	31	26	22	25	21	18	19	16	15	12
9	49	37	30	25	44	34	28	23	28	23	20	23	19	17	17	15	13	11
10	46	34	27	23	41	31	25	21	26	21	18	21	17	15	16	14	12	10

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

	0°	45°	90°
0°	2185	2185	2185
5°	2188	2150	2164
10°	2167	2108	2093
15°	2137	2038	1984
20°	2097	1942	1851
25°	2057	1834	1722
30°	2003	1724	1558
35°	1950	1605	1414
40°	1896	1482	1250
45°	1833	1346	1100
50°	1768	1209	954
55°	1700	1062	814
60°	1621	908	670
65°	1531	752	603
70°	1422	606	546
75°	1284	534	496
80°	1085	448	430
85°	756	299	323

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 3007 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	257.7	1.6
10°-20°	707.6	4.3
20°-30°	993.4	6.0
30°-40°	1082.8	6.6
40°-50°	995.2	6.0
50°-60°	781.6	4.8
60°-70°	508.8	3.1
70°-80°	261.9	1.6
80°-90°	77.8	0.5
90°-100°	238.7	1.5
100°-110°	758.6	4.6
110°-120°	1298.1	7.9
120°-130°	1707.2	10.4
130°-140°	1916.3	11.6
140°-150°	1879.1	11.4
150°-160°	1576.3	9.6
160°-170°	1045.4	6.4
170°-180°	365.4	2.2
0°-30°	1958.7	11.9
0°-40°	3041.5	18.5
0°-60°	4818.4	29.3
0°-90°	5666.9	34.4
90°-120°	2295.4	14.0
90°-150°	7798.0	47.4
90°-180°	10785.0	65.6
0°-180°	16452.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2750	2750	2750	2750	2750	
5°	2750	2738	2705	2728	2720	261
15°	2616	2588	2504	2456	2432	737
25°	2374	2295	2130	2028	1991	1092
35°	2046	1919	1700	1543	1488	1281
45°	1672	1506	1244	1068	1008	1292
55°	1272	1078	809	660	612	1136
65°	859	657	433	349	341	851
75°	458	284	199	182	179	484
85°	107	55	47	47	47	123
90°	3	42	114	107	110	16
95°	170	202	208	208	202	189
105°	700	710	716	722	722	739
115°	1303	1321	1316	1312	1303	1288
125°	1895	1924	1914	1904	1900	1693
135°	2451	2487	2494	2490	2481	1894
145°	2975	2998	3017	3021	3008	1859
155°	3402	3411	3422	3438	3428	1566
165°	3701	3698	3698	3721	3704	1044
175°	3851	3842	3835	3858	3838	366
180°	3858	3858	3858	3858	3858	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2750.1	2750.1	2750.1	2750.1	2750.1
2.5°	2762.5	2750.1	2722.6	2747.7	2742.7
5°	2750.1	2737.7	2705.2	2727.7	2720.3
7.5°	2727.7	2712.8	2678.0	2687.8	2675.4
10°	2697.8	2680.3	2630.8	2623.1	2608.3
12.5°	2660.6	2638.1	2570.8	2556.0	2528.5
15°	2615.7	2588.2	2503.7	2456.4	2431.6
17.5°	2563.5	2523.5	2419.0	2364.3	2324.5
20°	2503.7	2453.8	2329.5	2267.4	2212.5
22.5°	2439.0	2381.7	2237.3	2152.8	2115.5
25°	2374.4	2294.6	2130.4	2028.5	1991.0
27.5°	2297.3	2212.5	2030.8	1913.8	1856.6
30°	2215.1	2120.3	1921.2	1794.5	1727.2
32.5°	2135.4	2020.8	1817.0	1667.5	1605.2
35°	2045.9	1918.9	1700.0	1543.1	1488.2
37.5°	1958.7	1821.6	1590.4	1418.5	1356.4
40°	1866.6	1717.4	1475.7	1299.1	1234.4
42.5°	1772.1	1612.8	1361.4	1177.1	1115.1
45°	1672.5	1505.6	1244.5	1067.5	1007.9
47.5°	1578.0	1401.3	1132.5	955.6	901.0
50°	1473.4	1296.8	1022.9	851.0	799.0
52.5°	1371.2	1184.5	918.4	754.1	706.9
55°	1271.7	1077.6	808.8	659.6	612.3
57.5°	1169.8	970.6	711.9	572.5	532.5
60°	1065.2	866.1	609.7	483.0	443.0
62.5°	963.3	764.2	522.6	403.2	383.4
65°	858.7	657.0	433.1	348.6	340.9
67.5°	759.1	557.4	348.6	306.1	298.7
70°	654.5	460.5	288.6	263.8	253.7
72.5°	555.1	370.7	241.3	221.6	216.5
75°	457.9	283.6	199.1	181.7	179.3
77.5°	361.0	201.5	156.8	146.8	141.8
80°	271.2	144.4	119.3	109.6	109.6
82.5°	189.1	97.1	82.1	77.1	77.1
85°	106.9	54.7	47.2	47.2	47.2
87.5°	39.9	19.9	19.9	17.4	17.4
90°	3.4	41.9	114.0	107.0	110.5
92.5°	72.1	97.7	101.1	104.7	104.7
95°	169.8	202.4	208.2	208.2	202.4
97.5°	282.7	312.8	325.7	325.7	325.7
100°	412.9	439.6	448.9	448.9	445.5
102.5°	550.2	569.9	582.8	586.2	582.8
105°	700.2	709.5	716.5	722.3	722.3
107.5°	849.1	863.0	863.0	865.4	849.1
110°	993.3	1012.0	1012.0	1012.0	1002.6



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1149.1	1168.9	1165.4	<i>1156.1</i>	1149.1
115°	1302.7	1321.3	1315.5	<i>1312.1</i>	1302.7
117.5°	1455.1	1480.6	1464.3	<i>1455.1</i>	1445.8
120°	1608.6	1634.2	1608.6	<i>1608.6</i>	1598.2
122.5°	1748.2	1780.7	1764.4	<i>1755.1</i>	1748.2
125°	1894.7	1923.8	1914.5	<i>1904.0</i>	1900.5
127.5°	2037.8	2073.8	2061.1	<i>2047.1</i>	2037.8
130°	2171.5	2213.5	2207.6	<i>2200.6</i>	2187.8
132.5°	2321.6	2354.2	2356.5	<i>2340.2</i>	2330.9
135°	2450.7	2486.7	2493.7	<i>2490.3</i>	2480.9
137.5°	2594.9	2624.0	2629.8	<i>2627.4</i>	2613.6
140°	2721.7	2750.8	2767.1	<i>2767.1</i>	2754.3
142.5°	2852.0	2881.1	2890.4	<i>2893.8</i>	2881.1
145°	2975.2	2998.5	3017.1	<i>3020.6</i>	3007.8
147.5°	3085.8	3114.8	3128.8	<i>3134.6</i>	3121.8
150°	3199.8	3219.5	3232.3	<i>3242.8</i>	3232.3
152.5°	3300.9	3320.7	3337.0	<i>3349.8</i>	3337.0
155°	3402.2	3411.4	3421.9	<i>3438.2</i>	3427.7
157.5°	3489.4	3496.3	3502.1	<i>3525.4</i>	3509.1
160°	3567.3	3574.3	3577.7	<i>3597.6</i>	3583.6
162.5°	3639.4	3639.4	3643.0	<i>3665.0</i>	3648.7
165°	3701.1	3697.5	3697.5	<i>3720.8</i>	3704.5
167.5°	3756.8	3746.4	3746.4	<i>3769.7</i>	3753.4
170°	3798.8	3789.5	3786.0	<i>3809.2</i>	3789.5
172.5°	3827.8	3818.5	3815.1	<i>3838.4</i>	3818.5
175°	3851.1	3841.8	3834.8	<i>3858.1</i>	3838.4
177.5°	<i>3863.9</i>	<i>3854.6</i>	<i>3847.6</i>	<i>3867.4</i>	<i>3847.6</i>
180°	3858.1	3858.1	3858.1	<i>3858.1</i>	3858.1



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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	8.20	8.92	9.28	10.00	11.48	4.17	4.89	5.26	5.97	7.45
	3H	9.87	10.51	10.96	11.60	13.10	5.35	6.00	6.45	7.09	8.58
	4H	10.47	11.08	11.58	12.17	13.67	5.80	6.41	6.90	7.50	9.00
	6H	10.89	11.45	12.00	12.54	14.05	6.12	6.68	7.23	7.77	9.28
	8H	11.01	11.54	12.13	12.65	14.16	6.20	6.74	7.32	7.85	9.35
	12H	11.07	11.57	12.19	12.68	14.21	6.24	6.75	7.37	7.85	9.38
4H	2H	8.20	8.81	9.32	9.90	11.41	4.75	5.36	5.87	6.45	7.96
	3H	10.02	10.53	11.14	11.65	13.16	6.10	6.60	7.21	7.72	9.23
	4H	10.71	11.17	11.83	12.28	13.82	6.64	7.10	7.76	8.21	9.75
	6H	11.22	11.62	12.35	12.75	14.28	7.05	7.45	8.18	8.58	10.11
	8H	11.39	11.76	12.52	12.89	14.43	7.18	7.55	8.31	8.67	10.22
	12H	11.48	11.82	12.63	12.95	14.50	7.24	7.58	8.39	8.71	10.26
8H	4H	10.67	11.04	11.80	12.16	13.71	6.91	7.28	8.04	8.40	9.95
	6H	11.23	11.54	12.38	12.70	14.24	7.43	7.73	8.58	8.90	10.44
	8H	11.45	11.71	12.60	12.86	14.42	7.62	7.89	8.77	9.03	10.59
	12H	11.58	11.82	12.74	12.96	14.55	7.73	7.97	8.89	9.11	10.71
12H	4H	10.62	10.95	11.76	12.09	13.64	6.91	7.25	8.06	8.38	9.93
	6H	11.21	11.47	12.36	12.62	14.18	7.48	7.74	8.63	8.89	10.45
	8H	11.42	11.66	12.58	12.80	14.39	7.68	7.92	8.84	9.06	10.65