

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: P912932

Luminaire Tested: DFN2DIP-TR4F0-090D100US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

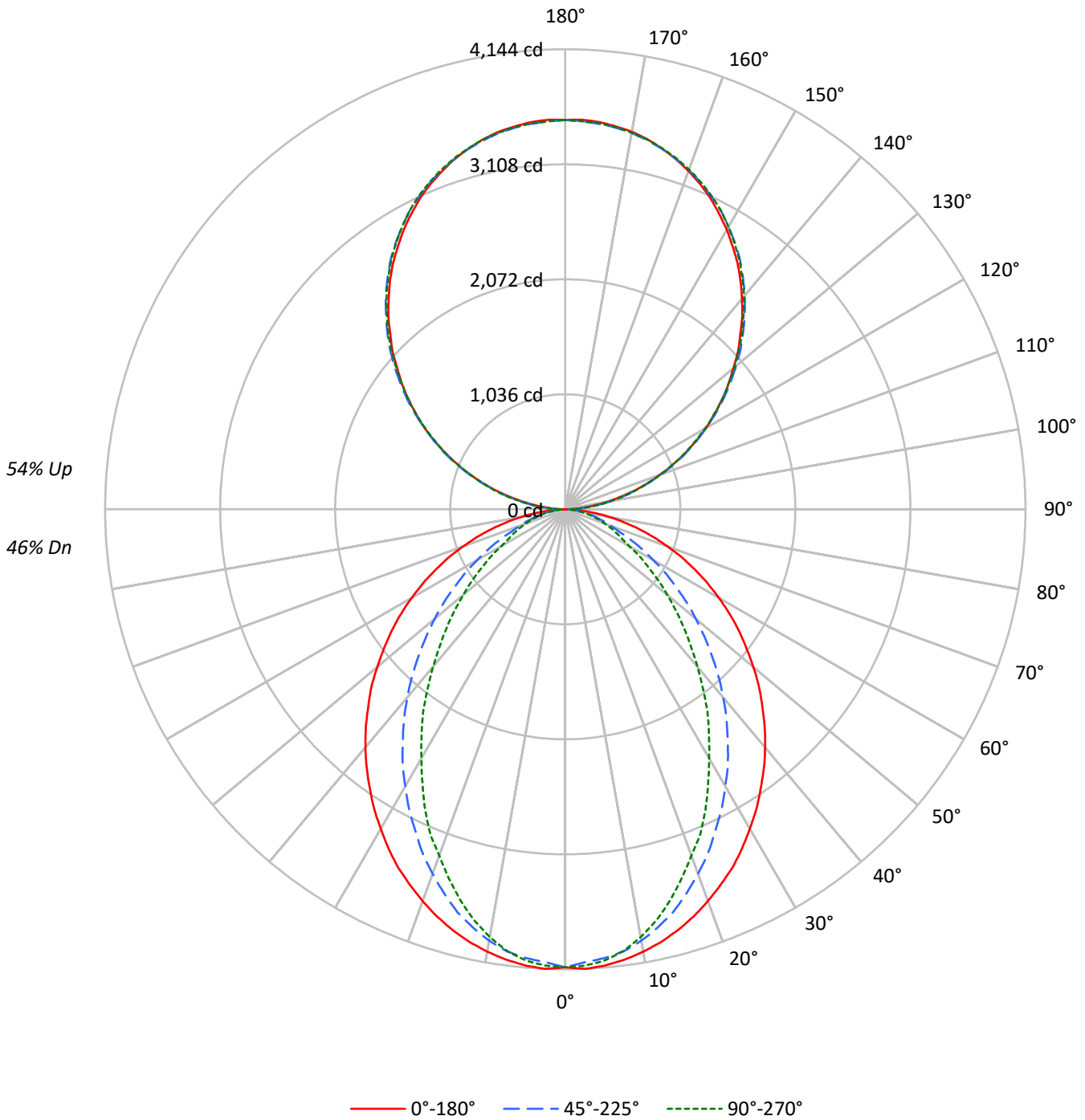
Test Method: LM-79-2019  
Report Number: P912932  
REPORT IS A COMBINATION OF REPORTS P900488 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D100US850-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18298.5 lumens  
Efficiency: N/A  
Efficacy: 111.7 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): 163.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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	106	106	106	106	98	98	98	98	81	81	81	66	66	66	53	53	53	46	46	46	46
1	97	93	90	86	89	86	83	80	72	70	68	59	58	56	47	46	45	40	40	40	40
2	89	82	76	71	82	76	71	66	64	60	57	52	50	48	42	41	39	34	34	34	34
3	82	72	65	60	75	67	61	56	56	52	48	47	44	41	38	36	34	30	30	30	30
4	75	64	57	51	69	60	53	48	50	45	41	42	38	35	34	32	29	26	26	26	26
5	69	58	50	44	63	53	46	41	45	40	36	38	34	31	31	28	26	23	23	23	23
6	63	52	44	38	58	48	41	36	41	36	32	34	30	27	28	25	23	20	20	20	20
7	59	47	39	34	54	44	37	32	37	32	28	31	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	33	27	23	29	24	20	25	21	18	21	18	15	13	13	13	13

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

	0°	45°	90°
0°	3277	3277	3277
5°	3282	3225	3246
10°	3250	3162	3140
15°	3205	3057	2977
20°	3146	2913	2776
25°	3086	2752	2583
30°	3004	2586	2337
35°	2924	2408	2122
40°	2843	2224	1874
45°	2749	2019	1650
50°	2652	1813	1431
55°	2550	1593	1221
60°	2432	1362	1005
65°	2297	1128	905
70°	2133	910	818
75°	1926	802	744
80°	1628	672	645
85°	1134	449	485

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2749 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	386.6	2.1
10°-20°	1061.3	5.8
20°-30°	1490.1	8.1
30°-40°	1624.3	8.9
40°-50°	1492.9	8.2
50°-60°	1172.4	6.4
60°-70°	763.1	4.2
70°-80°	392.8	2.1
80°-90°	110.3	0.6
90°-100°	217.0	1.2
100°-110°	689.6	3.8
110°-120°	1180.1	6.4
120°-130°	1552.0	8.5
130°-140°	1742.1	9.5
140°-150°	1708.3	9.3
150°-160°	1433.0	7.8
160°-170°	950.4	5.2
170°-180°	332.2	1.8
0°-30°	2938.0	16.1
0°-40°	4562.3	24.9
0°-60°	7227.6	39.5
0°-90°	8493.8	46.4
90°-120°	2086.7	11.4
90°-150°	7089.1	38.7
90°-180°	9805.0	53.6
0°-180°	18298.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4125	4125	4125	4125	4125	
5°	4125	4106	4058	4091	4080	391
15°	3924	3882	3756	3685	3648	1106
25°	3562	3442	3196	3043	2986	1638
35°	3069	2878	2550	2315	2232	1921
45°	2509	2258	1867	1601	1512	1937
55°	1908	1616	1213	989	918	1705
65°	1288	986	650	523	511	1277
75°	687	425	299	272	269	726
85°	160	82	71	71	71	184
90°	3	38	104	97	100	18
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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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4125.1	4125.1	4125.1	4125.1	4125.1
2.5°	4143.8	4125.1	4083.9	4121.6	4114.1
5°	4125.1	4106.5	4057.8	4091.4	4080.3
7.5°	4091.4	4069.3	4017.0	4031.7	4013.0
10°	4046.7	4020.6	3946.2	3934.6	3912.4
12.5°	3990.8	3957.2	3856.2	3834.0	3792.8
15°	3923.5	3882.4	3755.6	3684.7	3647.5
17.5°	3845.1	3785.3	3628.4	3546.5	3486.7
20°	3755.6	3680.8	3494.1	3401.1	3318.7
22.5°	3658.6	3572.6	3355.9	3229.2	3173.4
25°	3561.6	3441.9	3195.6	3042.7	2986.4
27.5°	3445.9	3318.7	3046.2	2870.8	2784.8
30°	3322.7	3180.5	2881.8	2691.8	2590.7
32.5°	3203.0	3031.1	2725.4	2501.2	2407.7
35°	3068.8	2878.3	2549.9	2314.7	2232.3
37.5°	2938.1	2732.6	2385.6	2127.7	2034.7
40°	2799.9	2576.1	2213.7	1948.7	1851.7
42.5°	2658.1	2419.3	2042.1	1765.7	1672.6
45°	2508.8	2258.5	1866.7	1601.3	1511.8
47.5°	2366.9	2102.0	1698.8	1433.4	1351.4
50°	2210.1	1945.1	1534.4	1276.6	1198.5
52.5°	2056.9	1776.8	1377.6	1131.2	1060.3
55°	1907.5	1616.4	1213.1	989.4	918.5
57.5°	1754.7	1456.0	1067.9	858.7	798.9
60°	1597.7	1299.1	914.6	724.4	664.6
62.5°	1444.9	1146.3	783.8	604.8	575.1
65°	1288.0	985.5	649.5	522.8	511.4
67.5°	1138.7	836.1	522.8	459.0	447.9
70°	981.9	690.8	433.0	395.7	380.6
72.5°	832.5	556.1	362.0	332.3	324.8
75°	686.8	425.4	298.7	272.5	268.9
77.5°	541.4	302.2	235.2	220.2	212.7
80°	406.8	216.7	179.0	164.4	164.4
82.5°	283.6	145.7	123.2	115.7	115.7
85°	160.4	82.0	70.9	70.9	70.9
87.5°	59.8	29.7	29.7	26.2	26.2
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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**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	10.92	11.72	11.91	12.72	14.05	6.89	7.70	7.89	8.70	10.02
	3H	12.59	13.31	13.60	14.32	15.67	8.08	8.80	9.08	9.81	11.15
	4H	13.20	13.88	14.22	14.89	16.25	8.53	9.21	9.55	10.22	11.57
	6H	13.62	14.25	14.65	15.26	16.63	8.85	9.47	9.88	10.49	11.86
	8H	13.75	14.34	14.78	15.37	16.74	8.94	9.53	9.97	10.57	11.93
	12H	13.81	14.37	14.85	15.40	16.78	8.98	9.55	10.02	10.58	11.96
4H	2H	10.93	11.61	11.96	12.63	13.98	7.48	8.16	8.51	9.18	10.53
	3H	12.76	13.32	13.79	14.37	15.73	8.83	9.40	9.87	10.44	11.81
	4H	13.45	13.97	14.49	15.00	16.39	9.38	9.90	10.42	10.93	12.32
	6H	13.97	14.41	15.01	15.47	16.85	9.80	10.24	10.85	11.30	12.68
	8H	14.14	14.55	15.19	15.60	17.00	9.93	10.34	10.98	11.39	12.79
	12H	14.23	14.61	15.30	15.67	17.08	9.99	10.37	11.06	11.43	12.84
8H	4H	13.42	13.83	14.47	14.88	16.28	9.66	10.07	10.71	11.12	12.52
	6H	13.98	14.32	15.06	15.42	16.81	10.18	10.52	11.25	11.61	13.01
	8H	14.20	14.50	15.28	15.57	16.99	10.37	10.67	11.45	11.74	13.16
	12H	14.34	14.60	15.42	15.67	17.13	10.49	10.75	11.57	11.82	13.28
12H	4H	13.37	13.74	14.44	14.81	16.21	9.66	10.04	10.73	11.10	12.50
	6H	13.96	14.26	15.04	15.33	16.75	10.23	10.53	11.31	11.60	13.02
	8H	14.18	14.44	15.26	15.51	16.97	10.44	10.70	11.52	11.77	13.23