

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: P912936

Luminaire Tested: DFN2DIP-TR4F0-090D110US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

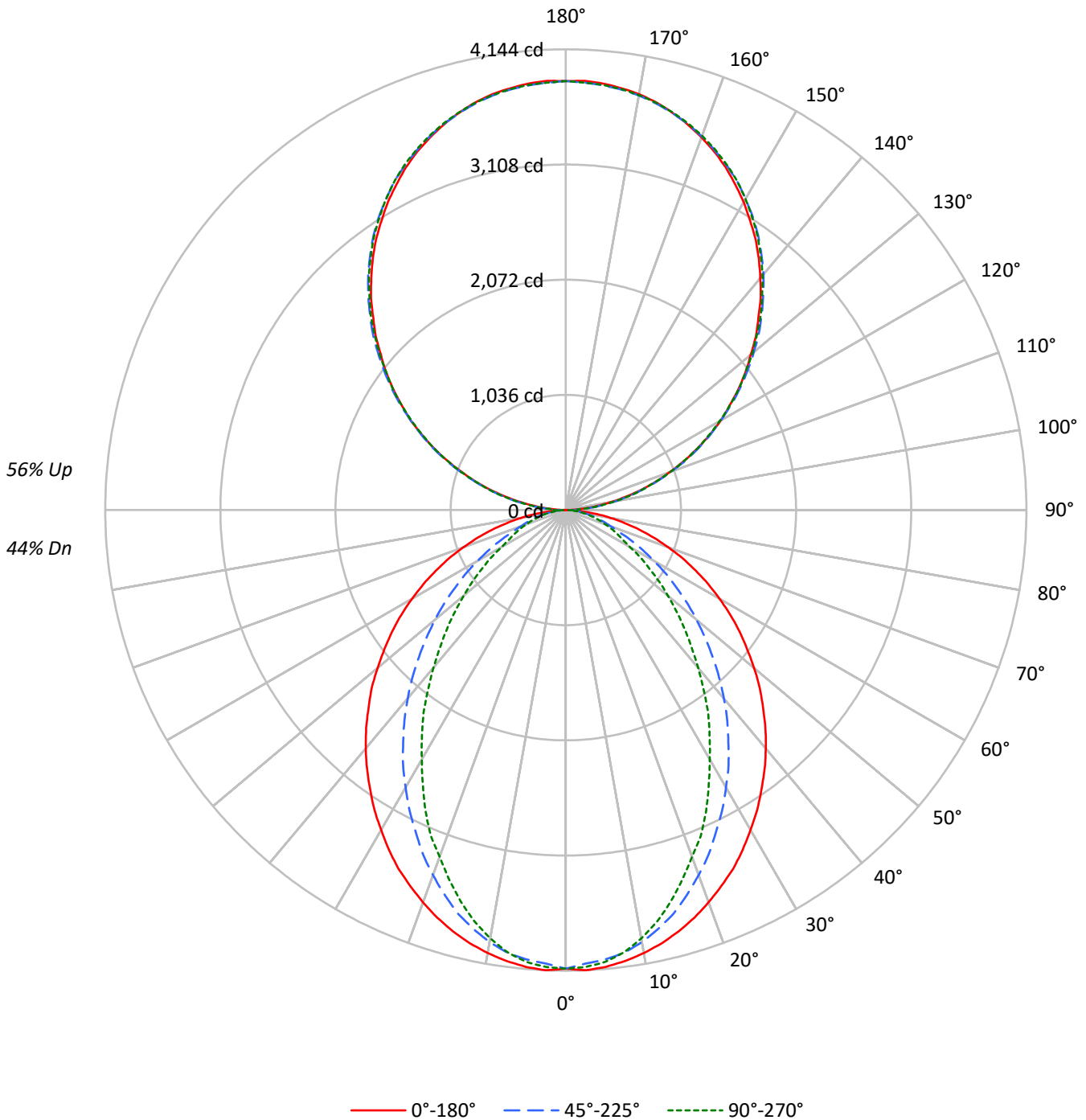
Test Method: LM-79-2019  
Report Number: P912936  
REPORT IS A COMBINATION OF REPORTS P900506 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D110US850-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19280.0 lumens  
Efficiency: N/A  
Efficacy: 112.0 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): 172.2  
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				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	97	97	97	97	80	80	80	65	65	65	51	51	51	44			44
1	97	93	89	86	89	85	82	79	71	69	67	58	56	55	45	44	44	38			38
2	89	81	76	71	81	75	70	66	62	59	56	51	49	46	40	39	37	32			32
3	81	72	65	59	74	66	60	55	55	51	47	45	42	40	36	34	32	28			28
4	74	64	56	51	68	59	52	47	50	45	41	41	37	34	33	30	28	24			24
5	68	57	49	44	62	53	46	41	45	39	35	37	33	30	30	27	25	21			21
6	63	51	44	38	58	48	41	36	40	35	31	33	29	26	27	24	22	19			19
7	58	46	39	33	53	43	36	31	37	31	27	30	27	24	25	22	20	17			17
8	54	42	35	30	50	39	33	28	33	28	24	28	24	21	23	20	18	15			15
9	51	39	31	26	46	36	29	25	31	26	22	26	22	19	21	18	16	14			14
10	47	35	28	24	43	33	27	22	28	23	20	24	20	17	20	17	15	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: 90°  
 Vertical Angle: 90°  
 Luminance: 3007 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	386.6	2.0
10°-20°	1061.3	5.5
20°-30°	1490.1	7.7
30°-40°	1624.3	8.4
40°-50°	1492.9	7.7
50°-60°	1172.4	6.1
60°-70°	763.1	4.0
70°-80°	392.8	2.0
80°-90°	111.3	0.6
90°-100°	238.7	1.2
100°-110°	758.6	3.9
110°-120°	1298.1	6.7
120°-130°	1707.2	8.9
130°-140°	1916.3	9.9
140°-150°	1879.1	9.7
150°-160°	1576.3	8.2
160°-170°	1045.4	5.4
170°-180°	365.4	1.9
0°-30°	2938.0	15.2
0°-40°	4562.3	23.7
0°-60°	7227.6	37.5
0°-90°	8494.8	44.1
90°-120°	2295.4	11.9
90°-150°	7798.0	40.4
90°-180°	10785.0	55.9
0°-180°	19280.0	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	42	114	107	110	19
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°	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°	3.4	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	1156.1	1149.1
115°	1302.7	1321.3	1315.5	1312.1	1302.7
117.5°	1455.1	1480.6	1464.3	1455.1	1445.8
120°	1608.6	1634.2	1608.6	1608.6	1598.2
122.5°	1748.2	1780.7	1764.4	1755.1	1748.2
125°	1894.7	1923.8	1914.5	1904.0	1900.5
127.5°	2037.8	2073.8	2061.1	2047.1	2037.8
130°	2171.5	2213.5	2207.6	2200.6	2187.8
132.5°	2321.6	2354.2	2356.5	2340.2	2330.9
135°	2450.7	2486.7	2493.7	2490.3	2480.9
137.5°	2594.9	2624.0	2629.8	2627.4	2613.6
140°	2721.7	2750.8	2767.1	2767.1	2754.3
142.5°	2852.0	2881.1	2890.4	2893.8	2881.1
145°	2975.2	2998.5	3017.1	3020.6	3007.8
147.5°	3085.8	3114.8	3128.8	3134.6	3121.8
150°	3199.8	3219.5	3232.3	3242.8	3232.3
152.5°	3300.9	3320.7	3337.0	3349.8	3337.0
155°	3402.2	3411.4	3421.9	3438.2	3427.7
157.5°	3489.4	3496.3	3502.1	3525.4	3509.1
160°	3567.3	3574.3	3577.7	3597.6	3583.6
162.5°	3639.4	3639.4	3643.0	3665.0	3648.7
165°	3701.1	3697.5	3697.5	3720.8	3704.5
167.5°	3756.8	3746.4	3746.4	3769.7	3753.4
170°	3798.8	3789.5	3786.0	3809.2	3789.5
172.5°	3827.8	3818.5	3815.1	3838.4	3818.5
175°	3851.1	3841.8	3834.8	3858.1	3838.4
177.5°	3863.9	3854.6	3847.6	3867.4	3847.6
180°	3858.1	3858.1	3858.1	3858.1	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	10.68	11.47	11.70	12.48	13.84	6.66	7.44	7.67	8.46	9.81
	3H	12.36	13.06	13.38	14.08	15.46	7.84	8.54	8.87	9.57	10.95
	4H	12.96	13.63	14.00	14.66	16.04	8.29	8.95	9.33	9.98	11.37
	6H	13.38	13.99	14.43	15.03	16.42	8.61	9.22	9.66	10.26	11.65
	8H	13.51	14.09	14.56	15.14	16.53	8.70	9.28	9.75	10.33	11.72
	12H	13.57	14.12	14.62	15.16	16.58	8.74	9.29	9.80	10.34	11.75
4H	2H	10.70	11.36	11.74	12.39	13.77	7.25	7.91	8.29	8.94	10.32
	3H	12.52	13.07	13.57	14.13	15.53	8.59	9.14	9.64	10.20	11.60
	4H	13.21	13.72	14.27	14.76	16.18	9.14	9.64	10.20	10.69	12.11
	6H	13.72	14.16	14.79	15.23	16.64	9.56	9.99	10.62	11.06	12.48
	8H	13.90	14.30	14.96	15.37	16.80	9.69	10.09	10.75	11.16	12.58
	12H	13.99	14.36	15.07	15.43	16.87	9.75	10.11	10.83	11.19	12.63
8H	4H	13.18	13.58	14.24	14.64	16.07	9.42	9.82	10.48	10.89	12.32
	6H	13.74	14.07	14.83	15.18	16.61	9.93	10.27	11.02	11.37	12.80
	8H	13.96	14.25	15.05	15.34	16.79	10.13	10.42	11.22	11.51	12.96
	12H	14.09	14.35	15.19	15.44	16.92	10.24	10.50	11.34	11.59	13.07
12H	4H	13.12	13.49	14.21	14.57	16.00	9.42	9.78	10.50	10.86	12.30
	6H	13.71	14.01	14.81	15.10	16.54	9.98	10.28	11.08	11.37	12.81
	8H	13.93	14.19	15.03	15.28	16.76	10.19	10.45	11.29	11.54	13.02