

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: P904752

Luminaire Tested: DFN2DIP-TR4F0-090D110US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

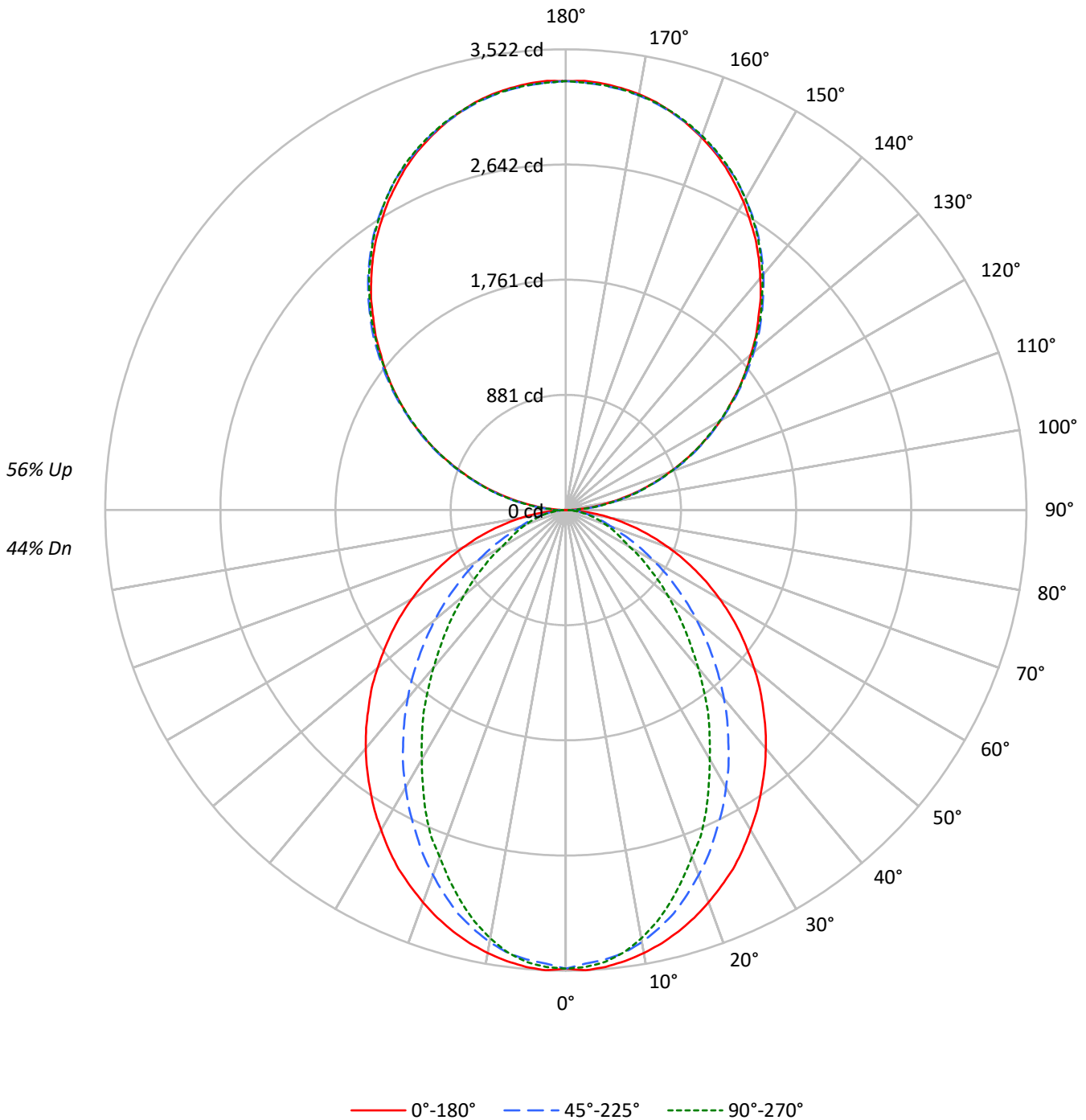
Test Method: LM-79-2019  
Report Number: P904752  
REPORT IS A COMBINATION OF REPORTS P900506 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D110US830-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16386.1 lumens  
Efficiency: N/A  
Efficacy: 95.2 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°	2785	2785	2785
5°	2790	2741	2758
10°	2762	2687	2669
15°	2724	2598	2530
20°	2674	2476	2360
25°	2622	2339	2195
30°	2553	2198	1986
35°	2485	2047	1803
40°	2417	1890	1593
45°	2336	1716	1403
50°	2254	1541	1217
55°	2167	1354	1038
60°	2067	1158	854
65°	1952	958	769
70°	1812	773	696
75°	1637	681	633
80°	1383	571	548
85°	964	381	411

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2556 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	328.6	2.0
10°-20°	902.0	5.5
20°-30°	1266.4	7.7
30°-40°	1380.5	8.4
40°-50°	1268.8	7.7
50°-60°	996.5	6.1
60°-70°	648.6	4.0
70°-80°	333.9	2.0
80°-90°	94.6	0.6
90°-100°	202.9	1.2
100°-110°	644.7	3.9
110°-120°	1103.3	6.7
120°-130°	1451.0	8.9
130°-140°	1628.6	9.9
140°-150°	1597.1	9.7
150°-160°	1339.7	8.2
160°-170°	888.5	5.4
170°-180°	310.5	1.9
0°-30°	2497.0	15.2
0°-40°	3877.5	23.7
0°-60°	6142.8	37.5
0°-90°	7219.8	44.1
90°-120°	1950.9	11.9
90°-150°	6627.6	40.4
90°-180°	9166.0	55.9
0°-180°	16386.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3506	3506	3506	3506	3506	
5°	3506	3490	3449	3477	3468	332
15°	3335	3300	3192	3132	3100	940
25°	3027	2925	2716	2586	2538	1392
35°	2608	2446	2167	1967	1897	1632
45°	2132	1920	1586	1361	1285	1647
55°	1621	1374	1031	841	781	1449
65°	1095	838	552	444	435	1085
75°	584	362	254	232	229	617
85°	136	70	60	60	60	156
90°	3	36	97	91	94	16
95°	144	172	177	177	172	161
105°	595	603	609	614	614	628
115°	1107	1123	1118	1115	1107	1095
125°	1610	1635	1627	1618	1615	1439
135°	2083	2114	2119	2116	2109	1610
145°	2529	2548	2564	2567	2556	1580
155°	2892	2899	2908	2922	2913	1331
165°	3146	3142	3142	3162	3148	887
175°	3273	3265	3259	3279	3262	311
180°	3279	3279	3279	3279	3279	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3506.0	3506.0	3506.0	3506.0	3506.0
2.5°	3521.8	3506.0	3470.9	3503.0	3496.5
5°	3506.0	3490.1	3448.8	3477.3	3467.9
7.5°	3477.3	3458.5	3414.1	3426.5	3410.7
10°	3439.3	3417.1	3353.8	3344.0	3325.2
12.5°	3391.8	3363.3	3277.4	3258.6	3223.5
15°	3334.6	3299.7	3191.9	3131.6	3100.0
17.5°	3268.0	3217.2	3083.8	3014.2	2963.4
20°	3191.9	3128.3	2969.7	2890.6	2820.6
22.5°	3109.4	3036.4	2852.2	2744.5	2697.1
25°	3027.0	2925.3	2715.9	2586.0	2538.2
27.5°	2928.7	2820.6	2589.0	2439.9	2366.8
30°	2824.0	2703.1	2449.3	2287.7	2201.9
32.5°	2722.3	2576.2	2316.3	2125.8	2046.4
35°	2608.2	2446.3	2167.2	1967.3	1897.2
37.5°	2497.1	2322.4	2027.5	1808.4	1729.3
40°	2379.6	2189.4	1881.4	1656.2	1573.8
42.5°	2259.1	2056.2	1735.6	1500.7	1421.5
45°	2132.2	1919.5	1586.5	1360.9	1284.9
47.5°	2011.7	1786.5	1443.8	1218.2	1148.6
50°	1878.4	1653.1	1304.1	1085.0	1018.6
52.5°	1748.1	1510.1	1170.8	961.4	901.2
55°	1621.2	1373.8	1031.0	840.9	780.6
57.5°	1491.3	1237.5	907.6	729.8	679.0
60°	1357.9	1104.1	777.3	615.7	564.9
62.5°	1228.0	974.2	666.2	514.1	488.8
65°	1094.7	837.5	552.0	444.3	434.6
67.5°	967.8	710.6	444.3	390.1	380.7
70°	834.5	587.1	368.0	336.3	323.5
72.5°	707.6	472.6	307.6	282.4	276.1
75°	583.7	361.6	253.8	231.6	228.6
77.5°	460.1	256.8	199.9	187.2	180.8
80°	345.7	184.2	152.1	139.7	139.7
82.5°	241.0	123.9	104.7	98.3	98.3
85°	136.3	69.7	60.2	60.2	60.2
87.5°	50.8	25.3	25.3	22.2	22.2
90°	2.9	35.6	96.9	91.0	93.9
92.5°	61.3	83.0	86.0	89.0	89.0
95°	144.3	172.0	176.9	176.9	172.0
97.5°	240.3	265.9	276.8	276.8	276.8
100°	350.9	373.6	381.5	381.5	378.6
102.5°	467.6	484.4	495.3	498.2	495.3
105°	595.1	603.0	609.0	613.9	613.9
107.5°	721.6	733.5	733.5	735.5	721.6
110°	844.2	860.1	860.1	860.1	852.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	976.7	993.4	990.5	982.6	976.7
115°	1107.2	1122.9	1118.0	1115.1	1107.2
117.5°	1236.7	1258.4	1244.5	1236.7	1228.8
120°	1367.2	1388.9	1367.2	1367.2	1358.3
122.5°	1485.8	1513.4	1499.6	1491.7	1485.8
125°	1610.3	1635.0	1627.1	1618.3	1615.2
127.5°	1731.9	1762.6	1751.7	1739.8	1731.9
130°	1845.6	1881.2	1876.2	1870.3	1859.4
132.5°	1973.1	2000.8	2002.8	1989.0	1981.0
135°	2082.8	2113.5	2119.4	2116.5	2108.6
137.5°	2205.5	2230.1	2235.1	2233.1	2221.3
140°	2313.2	2337.9	2351.7	2351.7	2340.9
142.5°	2423.9	2448.6	2456.5	2459.5	2448.6
145°	2528.7	2548.4	2564.3	2567.2	2556.4
147.5°	2622.6	2647.3	2659.2	2664.1	2653.3
150°	2719.5	2736.3	2747.1	2756.1	2747.1
152.5°	2805.5	2822.3	2836.1	2847.0	2836.1
155°	2891.5	2899.4	2908.3	2922.2	2913.2
157.5°	2965.6	2971.6	2976.5	2996.2	2982.4
160°	3031.9	3037.8	3040.7	3057.6	3045.7
162.5°	3093.1	3093.1	3096.2	3114.9	3101.1
165°	3145.5	3142.5	3142.5	3162.3	3148.5
167.5°	3193.0	3184.1	3184.1	3203.9	3190.0
170°	3228.6	3220.7	3217.7	3237.4	3220.7
172.5°	3253.3	3245.4	3242.4	3262.2	3245.4
175°	3273.1	3265.2	3259.2	3279.0	3262.2
177.5°	3283.9	3276.0	3270.1	3286.9	3270.1
180°	3279.0	3279.0	3279.0	3279.0	3279.0



TEST NUMBER: P904752  
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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	10.12	10.90	11.13	11.92	13.28	6.09	6.88	7.10	7.89	9.25
	3H	11.79	12.49	12.81	13.52	14.90	7.28	7.98	8.30	9.01	10.38
	4H	12.40	13.06	13.43	14.09	15.48	7.73	8.39	8.76	9.42	10.80
	6H	12.82	13.43	13.86	14.46	15.86	8.05	8.66	9.09	9.69	11.09
	8H	12.94	13.52	13.99	14.57	15.96	8.14	8.72	9.19	9.77	11.16
	12H	13.00	13.55	14.06	14.60	16.01	8.18	8.73	9.23	9.77	11.19
4H	2H	10.13	10.79	11.17	11.82	13.21	6.68	7.34	7.72	8.37	9.76
	3H	11.96	12.51	13.01	13.56	14.96	8.03	8.58	9.08	9.64	11.03
	4H	12.65	13.15	13.70	14.20	15.62	8.57	9.08	9.63	10.13	11.55
	6H	13.16	13.59	14.22	14.66	16.08	8.99	9.43	10.06	10.50	11.91
	8H	13.33	13.74	14.40	14.80	16.23	9.12	9.53	10.19	10.59	12.02
	12H	13.42	13.79	14.51	14.87	16.30	9.18	9.55	10.27	10.63	12.06
8H	4H	12.61	13.01	13.68	14.08	15.51	8.85	9.26	9.92	10.32	11.75
	6H	13.17	13.51	14.26	14.62	16.04	9.37	9.70	10.46	10.81	12.24
	8H	13.39	13.68	14.49	14.77	16.22	9.56	9.85	10.66	10.94	12.39
	12H	13.53	13.78	14.63	14.87	16.36	9.68	9.94	10.78	11.02	12.51
12H	4H	12.56	12.93	13.64	14.00	15.44	8.85	9.22	9.94	10.30	11.73
	6H	13.15	13.44	14.25	14.53	15.98	9.42	9.71	10.51	10.80	12.25
	8H	13.37	13.63	14.47	14.71	16.20	9.63	9.89	10.73	10.97	12.46