

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: P921247

Luminaire Tested: DFN2DIP-4P2F0-030D020US940-FLONL

Issue Date: 11/21/2024

**Test Information**

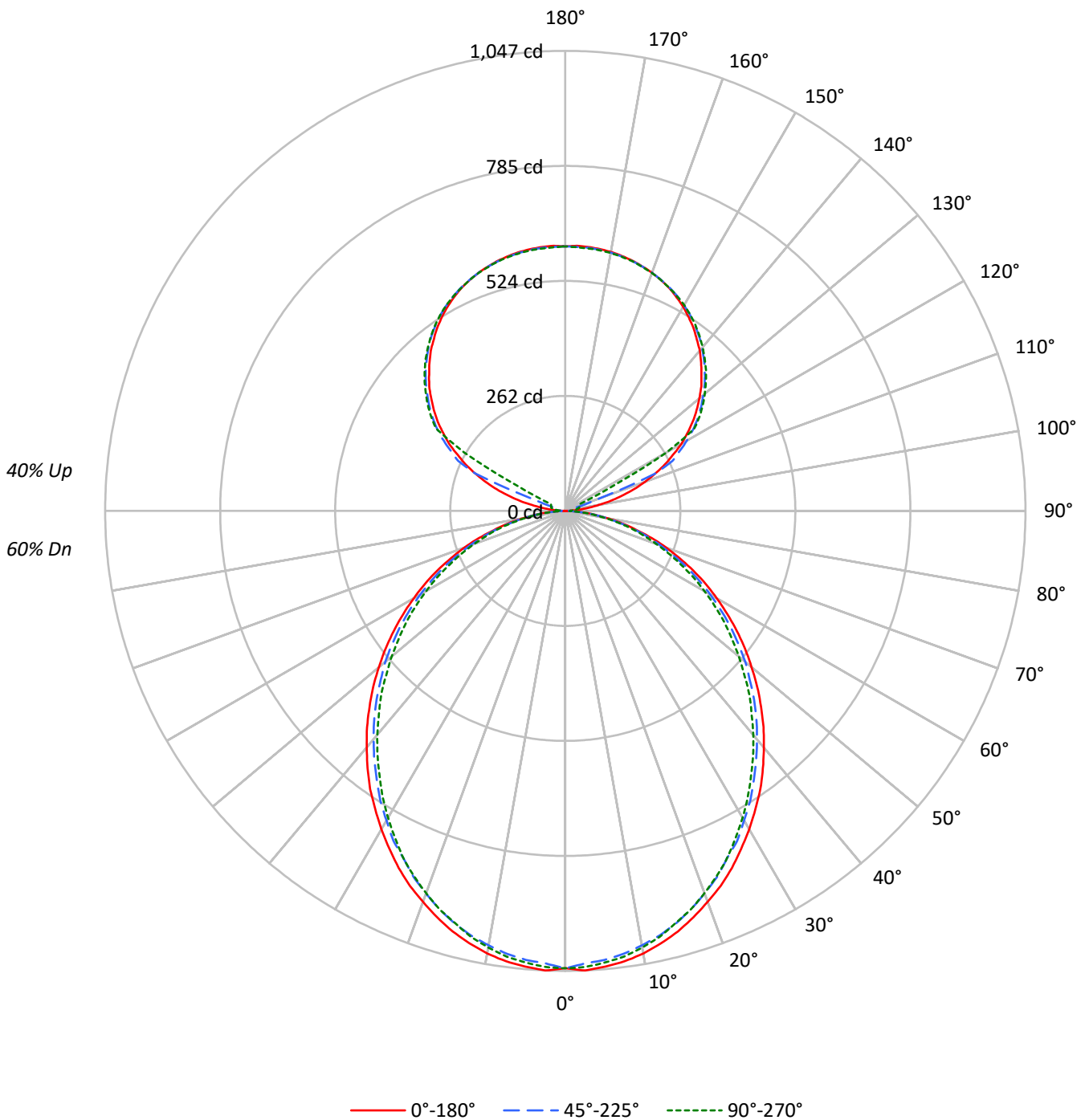
Test Method: LM-79-2019  
Report Number: P921247  
REPORT IS A COMBINATION OF REPORTS P900533 AND P897455  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P2F0-030D020US940-FLLONL  
Description: 2 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4413.9 lumens  
Efficiency: N/A  
Efficacy: 101.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.07' x L: 2.07' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 43.3  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
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
RCR																				
0	110	110	110	110	102	102	102	102	89	89	89	77	77	77	65	65	65	60		
1	100	96	92	88	93	90	86	83	78	75	73	67	66	64	58	56	55	51		
2	91	84	77	72	85	78	73	68	68	64	61	59	56	53	51	49	47	42		
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	40	36		
4	76	65	57	51	71	61	54	48	54	48	44	47	42	39	40	37	34	31		
5	70	58	50	44	65	55	47	42	48	42	38	42	37	34	36	33	30	27		
6	64	52	44	38	60	49	42	36	43	37	33	38	33	30	33	29	26	24		
7	60	47	39	33	56	44	37	32	39	33	29	35	30	26	30	26	23	21		
8	55	43	35	30	52	40	33	28	36	30	26	32	27	23	28	24	21	19		
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	26	22	19	17		
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17	15		

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

	0°	45°	90°
0°	2606	2606	2606
5°	2605	2563	2583
10°	2579	2522	2544
15°	2536	2474	2485
20°	2479	2410	2425
25°	2423	2334	2356
30°	2354	2264	2269
35°	2288	2181	2178
40°	2208	2098	2091
45°	2127	2014	2002
50°	2039	1926	1899
55°	1946	1824	1803
60°	1841	1704	1693
65°	1726	1578	1564
70°	1579	1426	1424
75°	1378	1242	1289
80°	1133	1009	1043
85°	759	631	648

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2127 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	98.0	2.2
10°-20°	275.6	6.2
20°-30°	405.1	9.2
30°-40°	470.5	10.7
40°-50°	469.9	10.6
50°-60°	409.8	9.3
60°-70°	302.9	6.9
70°-80°	171.4	3.9
80°-90°	46.3	1.0
90°-100°	19.8	0.4
100°-110°	74.0	1.7
110°-120°	196.2	4.4
120°-130°	325.4	7.4
130°-140°	345.7	7.8
140°-150°	321.3	7.3
150°-160°	258.3	5.9
160°-170°	166.4	3.8
170°-180°	57.3	1.3
0°-30°	778.7	17.6
0°-40°	1249.2	28.3
0°-60°	2128.9	48.2
0°-90°	2649.4	60.0
90°-120°	290.0	6.6
90°-150°	1282.5	29.1
90°-180°	1765.0	40.0
0°-180°	4413.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1041	1041	1041	1041	1041	
5°	1041	1037	1026	1034	1032	99
15°	991	985	972	976	971	279
25°	897	889	872	874	872	413
35°	774	764	748	742	737	483
45°	630	623	608	597	592	486
55°	476	470	458	446	442	426
65°	321	315	305	296	291	318
75°	168	166	161	155	157	179
85°	41	40	39	36	35	46
90°	0	5	9	11	12	4
95°	28	14	17	19	19	33
105°	132	145	27	31	33	141
115°	250	258	269	67	36	247
125°	354	360	368	371	372	316
135°	438	445	449	453	452	338
145°	508	508	515	518	516	318
155°	560	556	561	564	560	258
165°	590	587	588	592	588	167
175°	603	600	601	604	600	57
180°	602	602	602	602	602	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1040.9	1040.9	1040.9	1040.9	1040.9
2.5°	1047.0	1042.0	1030.9	1040.9	1039.0
5°	1040.9	1037.0	1025.9	1033.9	1032.0
7.5°	1033.9	1028.0	1016.9	1025.0	1023.0
10°	1023.0	1015.9	1004.0	1011.9	1009.0
12.5°	1007.9	1001.9	990.0	994.9	992.9
15°	990.9	985.0	971.9	975.9	970.9
17.5°	969.8	963.9	950.8	955.8	950.8
20°	946.8	940.8	926.8	929.8	925.9
22.5°	923.9	914.9	901.8	901.8	899.7
25°	896.8	888.9	871.8	873.8	871.8
27.5°	866.7	859.7	846.8	843.8	838.8
30°	836.8	828.8	813.8	810.7	806.7
32.5°	804.8	798.8	782.7	776.7	772.7
35°	773.7	763.7	747.7	741.6	736.6
37.5°	738.7	729.7	713.6	706.6	701.6
40°	702.7	694.6	678.6	669.7	665.7
42.5°	667.6	659.6	643.6	633.6	627.6
45°	629.6	622.6	607.5	596.6	592.5
47.5°	592.5	585.6	569.5	558.5	552.5
50°	553.5	548.5	534.5	520.5	515.5
52.5°	515.5	508.5	495.5	484.5	477.4
55°	476.5	470.5	458.4	446.5	441.5
57.5°	437.4	432.4	419.4	407.3	403.3
60°	398.3	394.4	380.4	369.3	366.4
62.5°	360.3	353.3	343.3	333.3	329.3
65°	321.4	315.3	305.3	296.3	291.3
67.5°	281.3	276.3	267.2	260.3	256.3
70°	244.2	240.2	231.2	224.2	220.3
72.5°	206.3	202.2	197.2	190.2	187.3
75°	168.1	166.2	161.1	155.2	157.2
77.5°	134.1	130.1	128.0	125.1	122.2
80°	100.1	99.1	97.0	94.1	92.1
82.5°	68.0	68.0	67.1	63.0	63.0
85°	41.0	40.0	39.1	36.0	35.0
87.5°	18.0	16.1	14.0	11.1	10.0
90°	0.4	5.3	8.6	10.9	11.8
92.5°	10.9	9.2	10.4	11.3	11.8
95°	28.3	13.9	16.9	19.2	18.7
97.5°	50.9	15.2	22.2	23.5	24.0
100°	77.1	17.4	24.8	28.3	29.2
102.5°	105.8	105.0	25.7	30.5	31.8
105°	132.4	145.4	26.6	31.3	33.1
107.5°	163.4	174.2	27.5	32.2	34.0
110°	193.0	202.1	76.2	32.7	34.4



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CATALOG NUMBER: DFN2DIP-4P2F0-030D020US940-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	220.8	228.6	221.2	33.5	34.9
115°	250.4	257.8	268.8	67.1	35.8
117.5°	276.1	284.8	292.2	230.0	115.8
120°	304.9	311.4	319.2	324.5	265.6
122.5°	329.2	336.2	344.9	347.5	348.0
125°	354.1	359.7	368.0	371.0	372.4
127.5°	376.7	382.8	389.4	393.7	394.1
130°	398.1	405.0	409.8	414.6	414.2
132.5°	419.8	425.5	430.3	434.2	433.8
135°	438.2	445.1	449.0	453.4	452.5
137.5°	457.3	462.5	466.9	471.3	469.9
140°	476.0	479.6	484.3	488.2	486.1
142.5°	491.7	494.8	500.4	503.9	501.7
145°	508.3	507.8	515.2	518.3	516.1
147.5°	522.6	521.3	528.7	530.8	529.1
150°	536.5	533.5	540.5	543.1	540.9
152.5°	548.3	544.8	551.3	554.0	550.9
155°	559.6	555.7	561.0	563.6	560.1
157.5°	568.8	565.3	569.3	572.3	568.8
160°	576.7	574.0	576.7	579.3	576.2
162.5°	583.5	580.9	583.2	586.2	582.3
165°	589.7	587.1	588.4	591.5	588.4
167.5°	594.5	591.8	593.2	596.3	592.3
170°	598.4	595.8	596.6	599.7	595.8
172.5°	601.0	598.4	599.3	602.4	598.4
175°	603.2	600.1	601.0	604.0	599.7
177.5°	604.0	601.0	601.5	604.5	600.6
180°	601.9	601.9	601.9	601.9	601.9



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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	11.34	12.30	12.21	13.19	14.31	10.90	11.86	11.76	12.74	13.86
	3H	12.99	13.85	13.87	14.75	15.89	12.50	13.36	13.38	14.26	15.40
	4H	13.56	14.38	14.46	15.28	16.44	13.07	13.89	13.97	14.79	15.94
	6H	13.95	14.70	14.86	15.61	16.78	13.45	14.20	14.36	15.11	16.28
	8H	14.05	14.77	14.96	15.69	16.86	13.55	14.26	14.46	15.19	16.36
	12H	14.09	14.77	15.01	15.70	16.89	13.59	14.27	14.51	15.19	16.38
4H	2H	11.80	12.62	12.70	13.52	14.68	11.45	12.26	12.35	13.16	14.32
	3H	13.65	14.33	14.56	15.26	16.44	13.24	13.92	14.15	14.86	16.03
	4H	14.35	14.97	15.27	15.90	17.10	13.93	14.55	14.85	15.48	16.67
	6H	14.85	15.39	15.79	16.34	17.54	14.42	14.95	15.35	15.91	17.10
	8H	14.99	15.49	15.93	16.44	17.65	14.55	15.05	15.49	16.00	17.21
	12H	15.06	15.51	16.01	16.47	17.69	14.61	15.06	15.57	16.03	17.24
8H	4H	14.54	15.04	15.48	15.99	17.20	14.16	14.66	15.10	15.61	16.82
	6H	15.15	15.56	16.11	16.55	17.76	14.77	15.18	15.73	16.17	17.38
	8H	15.36	15.72	16.33	16.70	17.93	14.96	15.33	15.94	16.31	17.54
	12H	15.48	15.80	16.45	16.77	18.05	15.07	15.39	16.04	16.36	17.64
12H	4H	14.53	14.98	15.49	15.95	17.16	14.16	14.61	15.12	15.58	16.79
	6H	15.17	15.54	16.15	16.52	17.75	14.80	15.17	15.77	16.15	17.37
	8H	15.40	15.73	16.38	16.70	17.97	15.02	15.34	16.00	16.32	17.59