

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: P915822

Luminaire Tested: DFN2DIP-4P3F0-020D040US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P915822  
REPORT IS A COMBINATION OF REPORTS P899049 AND P895917  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P3F0-020D040US930-FLLFLL  
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

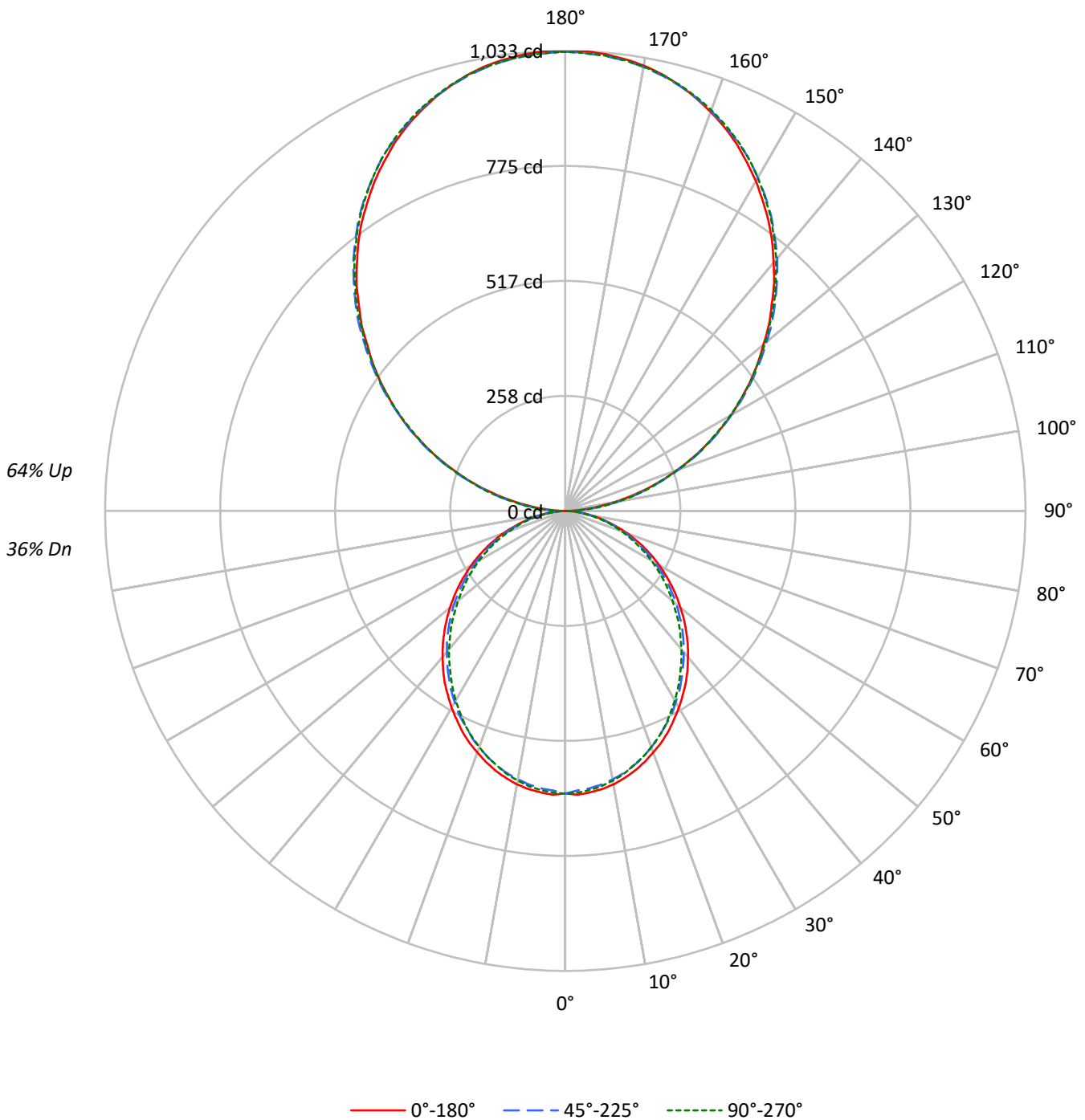
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4500.4 lumens  
Efficiency: N/A  
Efficacy: 99.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 45.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	43	43	43	36			36
1	95	90	87	83	85	82	79	76	66	64	62	52	50	49	38	37	36	30			30
2	86	79	73	68	78	72	66	62	58	54	51	45	43	41	34	32	31	25			25
3	79	69	62	56	71	63	57	52	51	47	43	40	37	34	30	28	26	21			21
4	72	61	54	48	65	56	49	44	45	40	37	36	32	29	27	24	22	18			18
5	66	54	47	41	59	50	43	38	40	35	31	32	28	25	24	22	20	16			16
6	61	49	41	35	55	45	38	33	36	31	27	29	25	22	22	19	17	14			14
7	56	44	36	31	50	40	33	28	33	28	24	26	22	20	20	17	15	12			12
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	16	14	11			11
9	48	36	29	24	44	33	27	22	27	22	19	22	18	16	17	14	12	10			10
10	45	33	26	21	41	30	24	20	25	20	17	20	17	14	16	13	11	9			9

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

	0°	45°	90°
0°	723	723	723
5°	724	712	718
10°	717	702	708
15°	706	690	692
20°	692	674	676
25°	677	654	658
30°	659	636	635
35°	642	614	611
40°	620	592	587
45°	599	571	564
50°	576	548	536
55°	551	521	511
60°	524	490	482
65°	494	457	448
70°	455	417	411
75°	402	369	376
80°	339	308	311
85°	237	204	204

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1033 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.7	1.3
10°-20°	168.0	3.7
20°-30°	246.9	5.5
30°-40°	286.8	6.4
40°-50°	286.4	6.4
50°-60°	249.7	5.5
60°-70°	184.6	4.1
70°-80°	104.5	2.3
80°-90°	30.5	0.7
90°-100°	63.8	1.4
100°-110°	202.8	4.5
110°-120°	347.0	7.7
120°-130°	456.4	10.1
130°-140°	512.3	11.4
140°-150°	502.4	11.2
150°-160°	421.4	9.4
160°-170°	279.5	6.2
170°-180°	97.7	2.2
0°-30°	474.7	10.5
0°-40°	761.5	16.9
0°-60°	1297.6	28.8
0°-90°	1617.2	35.9
90°-120°	613.6	13.6
90°-150°	2084.7	46.3
90°-180°	2883.0	64.1
0°-180°	4500.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	634	634	634	634	634	
5°	634	632	625	630	629	60
15°	604	600	592	595	592	170
25°	547	542	531	533	531	252
35°	472	466	456	452	449	295
45°	384	380	370	364	361	296
55°	290	287	279	272	269	260
65°	196	192	186	181	178	194
75°	102	101	98	95	96	109
85°	25	24	24	22	21	28
90°	1	11	30	29	30	4
95°	45	54	56	56	54	51
105°	187	190	192	193	193	198
115°	348	353	352	351	348	344
125°	506	514	512	509	508	453
135°	655	665	667	666	663	506
145°	795	802	807	808	804	497
155°	910	912	915	919	916	419
165°	989	988	988	995	990	279
175°	1030	1027	1025	1031	1026	98
180°	1031	1031	1031	1031	1031	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	634.5	634.5	634.5	634.5	634.5
2.5°	638.1	635.1	628.4	634.5	633.3
5°	634.5	632.1	625.3	630.2	629.0
7.5°	630.2	626.6	619.9	624.8	623.5
10°	623.5	619.3	612.0	616.8	615.0
12.5°	614.3	610.7	603.4	606.4	605.2
15°	604.0	600.4	592.4	594.8	591.8
17.5°	591.2	587.6	579.6	582.6	579.6
20°	577.1	573.5	564.9	566.8	564.3
22.5°	563.1	557.7	549.7	549.7	548.5
25°	546.7	541.8	531.4	532.6	531.4
27.5°	528.3	524.1	516.2	514.4	511.3
30°	510.1	505.2	496.0	494.2	491.7
32.5°	490.5	486.9	477.1	473.4	471.0
35°	471.7	465.5	455.8	452.1	449.0
37.5°	450.3	444.7	435.0	430.7	427.6
40°	428.3	423.4	413.6	408.2	405.7
42.5°	406.9	402.0	392.3	386.2	382.5
45°	383.8	379.5	370.3	363.6	361.2
47.5°	361.2	356.9	347.2	340.4	336.8
50°	337.4	334.4	325.8	317.2	314.2
52.5°	314.2	309.9	302.0	295.3	291.1
55°	290.4	286.7	279.4	272.1	269.0
57.5°	266.6	263.6	255.6	248.3	245.8
60°	242.8	240.4	231.9	225.1	223.3
62.5°	219.6	215.3	209.3	203.2	200.7
65°	195.8	192.2	186.1	180.6	177.6
67.5°	171.5	168.4	162.9	158.7	156.2
70°	148.9	146.4	140.9	136.6	134.3
72.5°	125.7	123.3	120.2	115.9	114.1
75°	102.5	101.3	98.2	94.6	95.8
77.5°	81.8	79.3	78.0	76.2	74.4
80°	61.1	60.4	59.2	57.3	56.1
82.5°	41.5	41.5	40.9	38.5	38.5
85°	24.9	24.4	23.8	21.9	21.4
87.5°	11.0	9.8	8.6	6.8	6.1
90°	0.9	11.2	30.5	28.6	29.5
92.5°	19.2	26.1	27.1	28.0	28.0
95°	45.4	54.1	55.7	55.7	54.1
97.5°	75.6	83.6	87.1	87.1	87.1
100°	110.4	117.6	120.0	120.0	119.1
102.5°	147.1	152.4	155.8	156.7	155.8
105°	187.2	189.6	191.5	193.1	193.1
107.5°	227.0	230.7	230.7	231.3	227.0
110°	265.5	270.5	270.5	270.5	268.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	307.2	312.5	311.5	309.1	307.2
115°	348.2	353.3	351.6	350.7	348.2
117.5°	389.0	395.8	391.5	389.0	386.5
120°	430.1	436.8	430.1	430.1	427.2
122.5°	467.3	476.1	471.7	469.2	467.3
125°	506.5	514.3	511.8	509.0	508.1
127.5°	544.8	554.4	551.0	547.2	544.8
130°	580.5	591.7	590.2	588.3	584.9
132.5°	620.6	629.3	630.0	625.6	623.1
135°	655.2	664.8	666.7	665.7	663.2
137.5°	693.7	701.5	703.0	702.4	698.7
140°	727.6	735.4	739.7	739.7	736.3
142.5°	762.5	770.2	772.7	773.6	770.2
145°	795.4	801.6	806.6	807.6	804.1
147.5°	824.9	832.7	836.4	838.0	834.5
150°	855.4	860.7	864.1	866.9	864.1
152.5°	882.5	887.7	892.1	895.5	892.1
155°	909.5	912.0	914.8	919.2	916.3
157.5°	932.9	934.7	936.2	942.5	938.1
160°	953.7	955.5	956.4	961.7	958.0
162.5°	972.9	972.9	973.9	979.7	975.4
165°	989.4	988.5	988.5	994.7	990.3
167.5°	1004.4	1001.5	1001.5	1007.8	1003.4
170°	1015.5	1013.0	1012.1	1018.3	1013.0
172.5°	1023.3	1020.8	1019.9	1026.1	1020.8
175°	1029.6	1027.0	1025.2	1031.4	1026.1
177.5°	1033.0	1030.5	1028.6	1033.9	1028.6
180°	1031.4	1031.4	1031.4	1031.4	1031.4



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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	4.65	5.40	5.72	6.47	7.93	4.20	4.95	5.27	6.02	7.48
	3H	6.30	6.97	7.37	8.05	9.52	5.80	6.47	6.88	7.55	9.03
	4H	6.87	7.51	7.96	8.59	10.07	6.38	7.02	7.47	8.10	9.58
	6H	7.27	7.85	8.36	8.94	10.43	6.76	7.35	7.86	8.43	9.93
	8H	7.37	7.92	8.47	9.02	10.51	6.86	7.42	7.97	8.52	10.01
	12H	7.41	7.94	8.52	9.03	10.54	6.90	7.43	8.01	8.52	10.03
4H	2H	5.09	5.73	6.19	6.81	8.29	4.74	5.37	5.83	6.45	7.94
	3H	6.94	7.47	8.04	8.58	10.08	6.53	7.06	7.64	8.17	9.67
	4H	7.65	8.13	8.76	9.23	10.75	7.22	7.71	8.33	8.81	10.32
	6H	8.15	8.57	9.27	9.69	11.20	7.72	8.14	8.83	9.26	10.77
	8H	8.30	8.69	9.41	9.80	11.33	7.86	8.25	8.97	9.36	10.89
	12H	8.36	8.72	9.49	9.84	11.37	7.91	8.27	9.04	9.39	10.92
8H	4H	7.83	8.22	8.95	9.33	10.86	7.45	7.84	8.57	8.96	10.48
	6H	8.45	8.77	9.59	9.93	11.45	8.07	8.39	9.20	9.54	11.07
	8H	8.67	8.95	9.81	10.09	11.63	8.27	8.56	9.42	9.69	11.23
	12H	8.79	9.04	9.94	10.17	11.75	8.38	8.63	9.53	9.76	11.34
12H	4H	7.81	8.16	8.94	9.29	10.82	7.44	7.79	8.57	8.92	10.45
	6H	8.48	8.76	9.62	9.90	11.44	8.10	8.39	9.25	9.52	11.06
	8H	8.71	8.96	9.86	10.09	11.67	8.33	8.58	9.48	9.71	11.29