

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: P920637

Luminaire Tested: DFN2DIP-TR2F0-020D040US935-FLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920637  
REPORT IS A COMBINATION OF REPORTS P901761 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-020D040US935-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

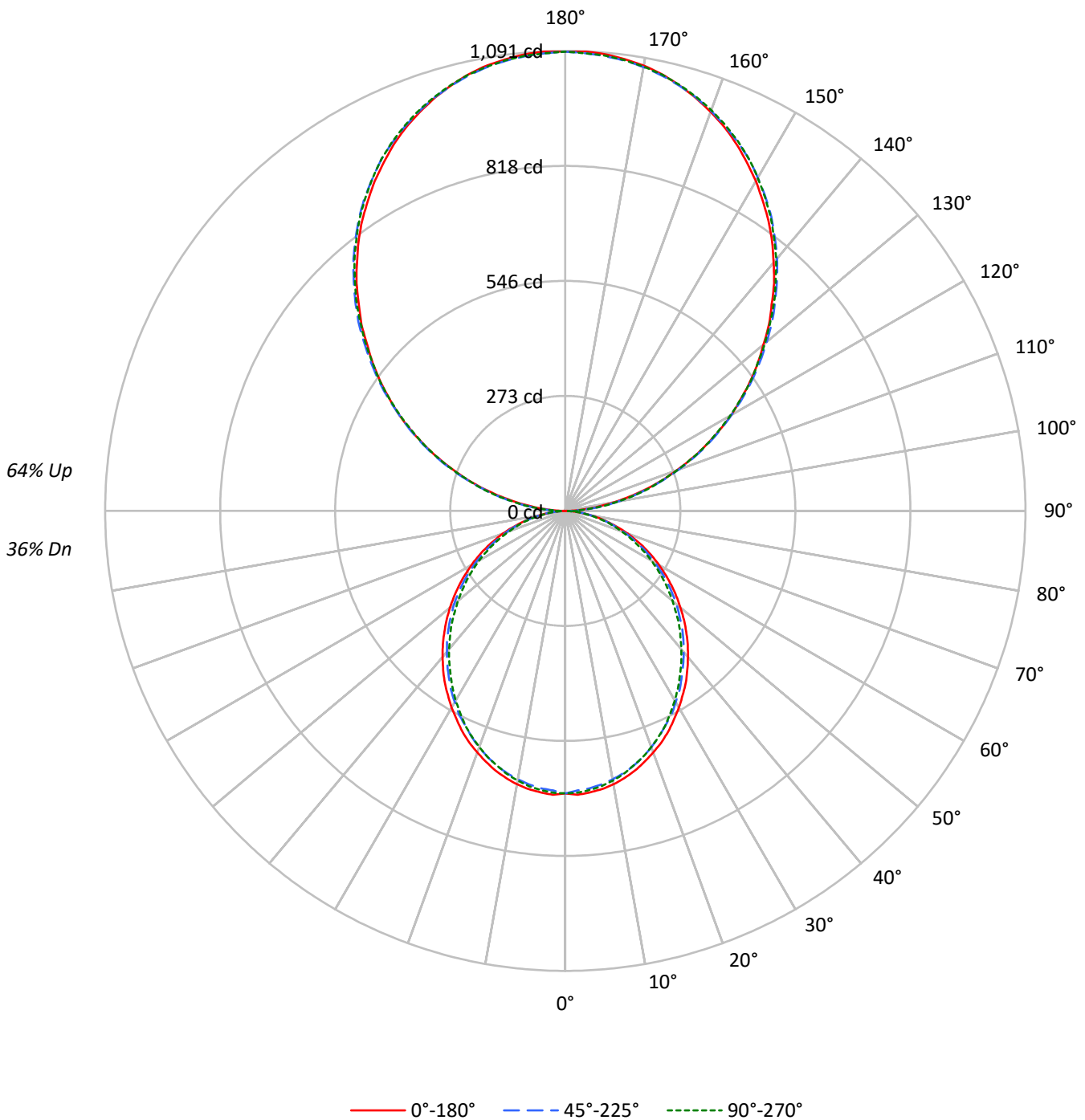
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4752.7 lumens  
Efficiency: N/A  
Efficacy: 106.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 44.6  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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°	1494	1494	1494
5°	1495	1470	1481
10°	1480	1447	1458
15°	1456	1420	1425
20°	1425	1384	1390
25°	1393	1341	1350
30°	1354	1301	1301
35°	1317	1254	1248
40°	1272	1206	1198
45°	1226	1159	1147
50°	1177	1109	1088
55°	1125	1051	1033
60°	1066	983	970
65°	1001	911	896
70°	918	824	815
75°	805	720	737
80°	668	588	595
85°	453	370	371

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 1423 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	63.1	1.3
10°-20°	177.4	3.7
20°-30°	260.8	5.5
30°-40°	302.9	6.4
40°-50°	302.5	6.4
50°-60°	263.8	5.5
60°-70°	195.0	4.1
70°-80°	110.3	2.3
80°-90°	32.2	0.7
90°-100°	67.4	1.4
100°-110°	214.2	4.5
110°-120°	366.5	7.7
120°-130°	482.0	10.1
130°-140°	541.0	11.4
140°-150°	530.5	11.2
150°-160°	445.0	9.4
160°-170°	295.1	6.2
170°-180°	103.2	2.2
0°-30°	501.3	10.5
0°-40°	804.1	16.9
0°-60°	1370.4	28.8
0°-90°	1707.9	35.9
90°-120°	648.0	13.6
90°-150°	2201.5	46.3
90°-180°	3045.0	64.1
0°-180°	4752.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	670	670	670	670	670	
5°	670	668	660	666	664	64
15°	638	634	626	628	625	180
25°	577	572	561	562	561	266
35°	498	492	481	477	474	311
45°	405	401	391	384	381	313
55°	307	303	295	287	284	274
65°	207	203	197	191	188	205
75°	108	107	104	100	101	116
85°	26	26	25	23	23	29
90°	1	12	32	30	31	5
95°	48	57	59	59	57	53
105°	198	200	202	204	204	209
115°	368	373	371	370	368	364
125°	535	543	540	538	537	478
135°	692	702	704	703	700	535
145°	840	846	852	853	849	525
155°	960	963	966	971	968	442
165°	1045	1044	1044	1050	1046	295
175°	1087	1085	1083	1089	1084	103
180°	1089	1089	1089	1089	1089	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	670.0	670.0	670.0	670.0	670.0
2.5°	673.9	670.7	663.6	670.0	668.8
5°	670.0	667.5	660.4	665.6	664.3
7.5°	665.6	661.7	654.6	659.8	658.5
10°	658.5	654.0	646.3	651.3	649.5
12.5°	648.8	645.0	637.2	640.4	639.1
15°	637.8	634.0	625.6	628.2	625.0
17.5°	624.3	620.5	612.1	615.3	612.1
20°	609.5	605.6	596.6	598.6	596.0
22.5°	594.7	588.9	580.5	580.5	579.2
25°	577.3	572.1	561.2	562.4	561.2
27.5°	557.9	553.4	545.1	543.2	539.9
30°	538.6	533.5	523.8	521.9	519.3
32.5°	518.0	514.2	503.9	500.0	497.4
35°	498.1	491.6	481.3	477.4	474.2
37.5°	475.5	469.7	459.3	454.9	451.6
40°	452.3	447.1	436.8	431.1	428.4
42.5°	429.7	424.6	414.3	407.9	404.0
45°	405.3	400.8	391.1	384.0	381.4
47.5°	381.4	376.9	366.6	359.5	355.7
50°	356.3	353.1	344.1	335.0	331.8
52.5°	331.8	327.3	318.9	311.9	307.4
55°	306.7	302.8	295.1	287.4	284.1
57.5°	281.5	278.4	269.9	262.3	259.6
60°	256.4	253.9	244.9	237.7	235.8
62.5°	232.0	227.4	221.0	214.6	212.0
65°	206.8	202.9	196.6	190.7	187.5
67.5°	181.1	177.8	172.0	167.6	165.0
70°	157.2	154.6	148.8	144.3	141.8
72.5°	132.8	130.2	126.9	122.4	120.5
75°	108.2	107.0	103.7	99.9	101.2
77.5°	86.4	83.8	82.4	80.5	78.6
80°	64.5	63.8	62.5	60.5	59.2
82.5°	43.8	43.8	43.2	40.6	40.6
85°	26.3	25.7	25.1	23.2	22.6
87.5°	11.6	10.3	9.0	7.1	6.5
90°	0.9	11.8	32.2	30.2	31.2
92.5°	20.3	27.6	28.6	29.5	29.5
95°	48.0	57.2	58.8	58.8	57.2
97.5°	79.8	88.3	92.0	92.0	92.0
100°	116.6	124.2	126.7	126.7	125.8
102.5°	155.3	160.9	164.5	165.5	164.5
105°	197.7	200.3	202.2	203.9	203.9
107.5°	239.7	243.7	243.7	244.3	239.7
110°	280.4	285.7	285.7	285.7	283.1



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	324.4	330.0	329.0	326.4	324.4
115°	367.7	373.1	371.3	370.4	367.7
117.5°	410.8	418.0	413.5	410.8	408.2
120°	454.2	461.3	454.2	454.2	451.2
122.5°	493.5	502.7	498.2	495.5	493.5
125°	534.9	543.1	540.5	537.5	536.6
127.5°	575.3	585.5	581.9	577.9	575.3
130°	613.0	624.9	623.3	621.3	617.7
132.5°	655.4	664.6	665.3	660.6	658.1
135°	691.9	702.1	704.0	703.0	700.4
137.5°	732.6	740.8	742.4	741.7	737.9
140°	768.4	776.6	781.2	781.2	777.6
142.5°	805.2	813.4	816.0	817.0	813.4
145°	840.0	846.5	851.8	852.8	849.2
147.5°	871.2	879.3	883.3	884.9	881.3
150°	903.4	909.0	912.6	915.5	912.6
152.5°	931.9	937.5	942.1	945.7	942.1
155°	960.4	963.1	966.0	970.7	967.7
157.5°	985.2	987.0	988.7	995.3	990.7
160°	1007.1	1009.1	1010.0	1015.6	1011.7
162.5°	1027.4	1027.4	1028.5	1034.7	1030.1
165°	1044.9	1043.9	1043.9	1050.4	1045.9
167.5°	1060.7	1057.6	1057.6	1064.3	1059.6
170°	1072.5	1069.8	1068.8	1075.4	1069.8
172.5°	1080.6	1078.1	1077.0	1083.7	1078.1
175°	1087.3	1084.6	1082.6	1089.2	1083.7
177.5°	1090.9	1088.2	1086.2	1091.8	1086.2
180°	1089.2	1089.2	1089.2	1089.2	1089.2



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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	7.08	7.82	8.15	8.89	10.35	6.65	7.40	7.72	8.47	9.93
	3H	8.70	9.37	9.78	10.45	11.93	8.24	8.91	9.32	9.99	11.47
	4H	9.27	9.91	10.36	10.99	12.47	8.81	9.45	9.90	10.53	12.01
	6H	9.65	10.23	10.74	11.32	12.81	9.19	9.77	10.28	10.86	12.35
	8H	9.74	10.30	10.84	11.40	12.88	9.28	9.84	10.38	10.94	12.43
	12H	9.77	10.30	10.88	11.40	12.91	9.31	9.84	10.42	10.93	12.45
4H	2H	7.51	8.15	8.61	9.23	10.71	7.18	7.81	8.27	8.89	10.38
	3H	9.34	9.87	10.45	10.98	12.48	8.96	9.49	10.06	10.60	12.09
	4H	10.03	10.52	11.14	11.62	13.13	9.64	10.13	10.75	11.22	12.74
	6H	10.52	10.94	11.64	12.06	13.57	10.12	10.54	11.24	11.66	13.17
	8H	10.66	11.05	11.77	12.16	13.68	10.26	10.65	11.37	11.76	13.29
	12H	10.71	11.07	11.84	12.19	13.72	10.31	10.66	11.44	11.78	13.32
8H	4H	10.21	10.60	11.33	11.71	13.24	9.86	10.25	10.97	11.36	12.89
	6H	10.81	11.13	11.95	12.29	13.81	10.46	10.78	11.59	11.93	13.46
	8H	11.01	11.30	12.16	12.43	13.97	10.66	10.94	11.80	12.07	13.62
	12H	11.12	11.37	12.27	12.50	14.08	10.75	11.00	11.90	12.13	13.71
12H	4H	10.19	10.54	11.32	11.67	13.20	9.84	10.20	10.98	11.32	12.85
	6H	10.83	11.12	11.98	12.25	13.79	10.49	10.77	11.63	11.91	13.45
	8H	11.05	11.30	12.20	12.43	14.01	10.71	10.95	11.85	12.09	13.66