

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: P922493

Luminaire Tested: DFN2DIP-PN4F0-110D040US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P922493
REPORT IS A COMBINATION OF REPORTS P901143 AND P898053
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D040US940-FLLONL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

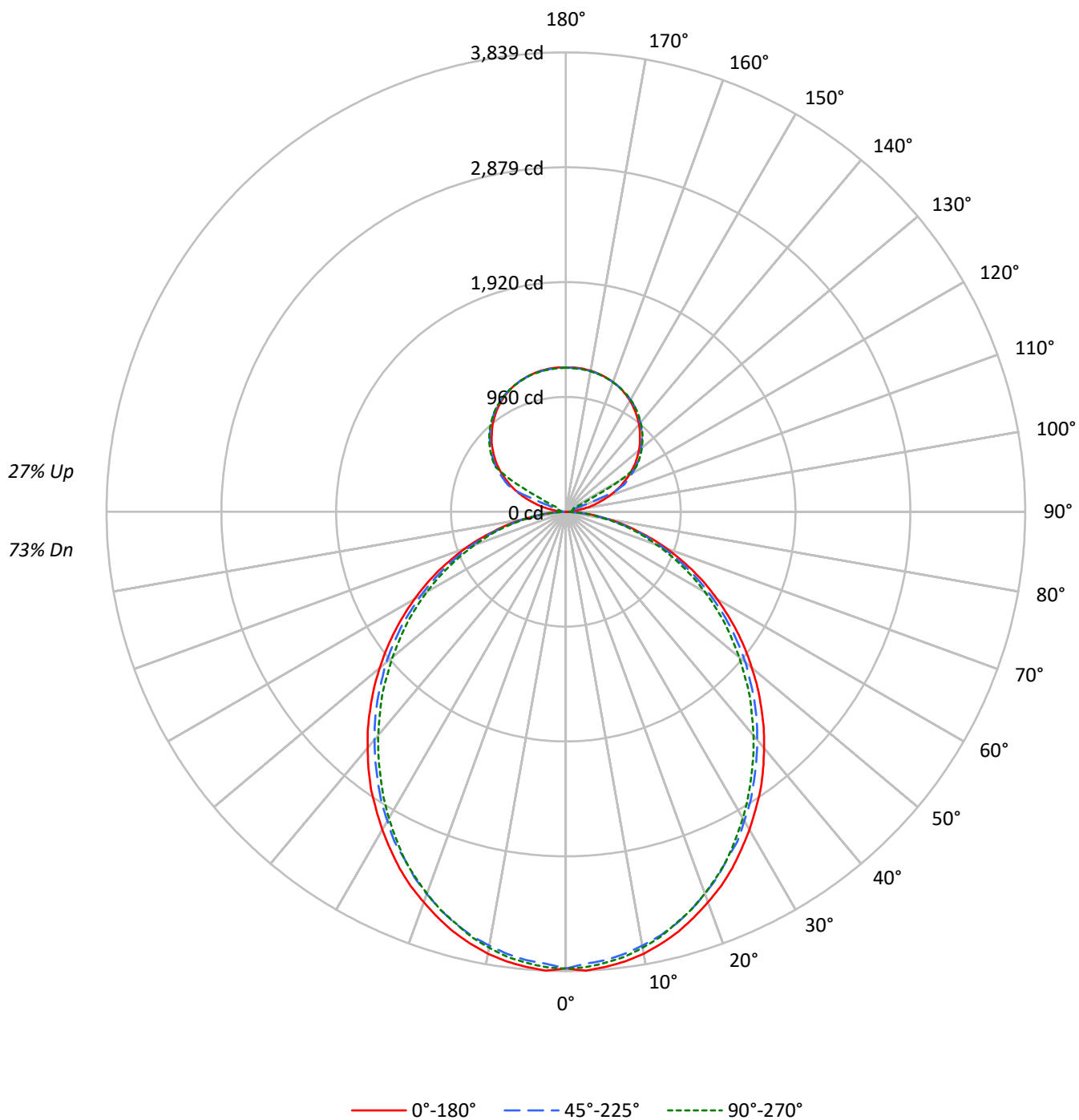
Lumens per Lamp: N/A
Luminaire Lumens: 13241.9 lumens
Efficiency: N/A
Efficacy: 91.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 144.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.996
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
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	113	113	113	113	107	107	107	107	96	96	96	87	87	87	78	78	78
1	103	99	95	91	98	94	90	87	85	82	79	76	74	72	69	67	66
2	94	86	80	74	89	82	76	71	74	70	66	67	64	60	60	58	55
3	86	76	68	62	81	72	65	60	66	60	55	59	55	51	54	50	47
4	78	67	59	53	74	64	57	51	58	52	47	53	48	44	48	44	41
5	72	60	52	45	68	57	50	44	52	46	41	48	42	38	43	39	35
6	67	54	46	39	63	52	44	38	47	41	36	43	38	34	39	35	31
7	62	49	41	35	58	47	39	34	43	36	32	39	34	30	36	31	28
8	57	45	37	31	54	43	35	30	39	33	28	36	31	27	33	28	25
9	54	41	33	28	51	39	32	27	36	30	26	33	28	24	30	26	23
10	50	38	30	25	48	36	29	24	33	27	23	31	26	22	28	24	21

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2786	2786	2786
5°	2790	2748	2766
10°	2768	2711	2729
15°	2727	2667	2671
20°	2672	2605	2612
25°	2617	2531	2543
30°	2549	2463	2455
35°	2484	2382	2363
40°	2404	2300	2275
45°	2324	2218	2185
50°	2237	2132	2080
55°	2146	2032	1984
60°	2042	1914	1875
65°	1930	1792	1745
70°	1787	1643	1606
75°	1588	1465	1478
80°	1349	1238	1233
85°	976	845	825

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2324 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.2	2.7
10°-20°	1010.7	7.6
20°-30°	1485.4	11.2
30°-40°	1725.2	13.0
40°-50°	1723.0	13.0
50°-60°	1502.4	11.3
60°-70°	1110.6	8.4
70°-80°	628.4	4.7
80°-90°	168.0	1.3
90°-100°	39.7	0.3
100°-110°	148.0	1.1
110°-120°	392.4	3.0
120°-130°	650.9	4.9
130°-140°	691.4	5.2
140°-150°	642.6	4.9
150°-160°	516.6	3.9
160°-170°	332.9	2.5
170°-180°	114.6	0.9
0°-30°	2855.3	21.6
0°-40°	4580.5	34.6
0°-60°	7805.9	58.9
0°-90°	9712.9	73.3
90°-120°	580.1	4.4
90°-150°	2565.0	19.4
90°-180°	3529.0	26.7
0°-180°	13241.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3817	3817	3817	3817	3817	
5°	3817	3802	3762	3791	3784	362
15°	3633	3611	3564	3578	3560	1023
25°	3288	3259	3197	3204	3197	1513
35°	2837	2800	2742	2719	2701	1772
45°	2309	2283	2228	2188	2173	1782
55°	1747	1725	1681	1637	1619	1562
65°	1178	1156	1120	1086	1068	1165
75°	616	609	591	569	576	658
85°	150	147	143	132	128	168
90°	1	10	17	22	24	12
95°	56	28	34	38	38	67
105°	265	291	53	63	66	283
115°	501	516	537	134	72	493
125°	708	720	736	742	745	632
135°	876	890	898	907	905	677
145°	1016	1016	1030	1036	1032	636
155°	1119	1112	1122	1127	1120	516
165°	1179	1174	1177	1183	1177	333
175°	1206	1200	1202	1208	1199	115
180°	1204	1204	1204	1204	1204	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3816.7	3816.7	3816.7	3816.7	3816.7
2.5°	3838.8	3820.5	3780.0	3816.7	3809.7
5°	3816.7	3802.3	3761.8	3790.9	3784.0
7.5°	3790.9	3769.2	3728.7	3758.3	3750.9
10°	3750.9	3725.1	3681.2	3710.3	3699.4
12.5°	3695.6	3673.8	3629.8	3648.1	3640.7
15°	3633.3	3611.4	3563.5	3578.3	3560.1
17.5°	3556.1	3534.4	3486.5	3504.8	3486.5
20°	3471.7	3449.8	3398.5	3409.4	3395.0
22.5°	3387.6	3354.4	3306.6	3306.6	3299.1
25°	3288.3	3259.1	3196.8	3203.8	3196.8
27.5°	3178.1	3152.4	3104.8	3094.0	3075.7
30°	3068.3	3038.7	2983.8	2972.9	2958.1
32.5°	2950.7	2928.9	2870.1	2847.9	2833.1
35°	2837.0	2800.4	2741.6	2719.4	2701.1
37.5°	2708.5	2675.4	2616.6	2590.9	2572.6
40°	2576.5	2546.9	2488.1	2455.4	2440.6
42.5°	2448.0	2418.4	2360.0	2323.0	2301.2
45°	2308.6	2282.9	2227.6	2187.5	2172.7
47.5°	2172.7	2147.1	2088.2	2047.7	2025.9
50°	2029.4	2011.2	1959.7	1908.3	1890.1
52.5°	1890.1	1864.3	1816.9	1776.3	1750.6
55°	1747.1	1724.9	1681.0	1636.9	1618.6
57.5°	1603.8	1585.6	1537.7	1493.6	1478.8
60°	1460.5	1446.2	1394.7	1354.2	1343.4
62.5°	1321.2	1295.5	1258.8	1222.3	1207.5
65°	1178.2	1156.0	1119.5	1086.4	1068.1
67.5°	1031.4	1012.8	980.1	954.4	939.6
70°	895.5	880.7	847.7	822.0	807.5
72.5°	756.2	741.4	723.1	697.4	686.4
75°	616.4	609.4	590.7	568.9	576.3
77.5°	491.8	477.0	469.6	458.7	447.8
80°	367.2	363.3	355.9	345.0	337.6
82.5°	249.6	249.6	246.1	231.3	231.3
85°	150.3	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
90°	0.8	10.4	17.4	21.8	23.5
92.5°	21.8	18.3	20.9	22.6	23.5
95°	56.5	27.8	33.9	38.3	37.5
97.5°	101.9	30.5	44.4	47.1	47.9
100°	154.2	34.9	49.7	56.5	58.3
102.5°	211.6	210.0	51.4	60.9	63.6
105°	264.7	291.0	53.1	62.7	66.2
107.5°	326.6	348.4	54.9	64.5	67.9
110°	385.9	404.1	152.5	65.4	68.8



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	441.7	457.3	442.5	67.1	69.7
115°	500.8	515.6	537.4	134.1	71.5
117.5°	552.2	569.6	584.5	459.9	231.7
120°	609.8	622.8	638.5	649.0	531.4
122.5°	658.4	672.4	689.9	695.1	696.0
125°	708.1	719.5	736.0	742.2	744.8
127.5°	753.4	765.6	778.7	787.5	788.3
130°	796.1	810.1	819.6	829.2	828.4
132.5°	839.6	851.0	860.6	868.4	867.6
135°	876.3	890.3	898.0	906.8	905.1
137.5°	914.5	925.0	933.8	942.4	939.9
140°	952.0	959.0	968.6	976.4	972.1
142.5°	983.5	989.5	1000.9	1007.7	1003.4
145°	1016.5	1015.7	1030.4	1036.5	1032.2
147.5°	1045.2	1042.6	1057.4	1061.8	1058.4
150°	1073.1	1067.0	1081.0	1086.2	1081.8
152.5°	1096.6	1089.7	1102.7	1108.0	1101.9
155°	1119.3	1111.5	1121.9	1127.1	1120.2
157.5°	1137.6	1130.6	1138.5	1144.6	1137.6
160°	1153.2	1148.0	1153.2	1158.4	1152.4
162.5°	1167.2	1162.0	1166.4	1172.4	1164.6
165°	1179.4	1174.2	1176.8	1182.9	1176.8
167.5°	1189.0	1183.7	1186.4	1192.5	1184.6
170°	1196.9	1191.6	1193.3	1199.4	1191.6
172.5°	1202.0	1196.9	1198.6	1204.7	1196.9
175°	1206.3	1200.2	1202.0	1208.1	1199.4
177.5°	1208.1	1202.0	1202.9	1209.1	1201.2
180°	1203.8	1203.8	1203.8	1203.8	1203.8

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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	12.76	13.88	13.49	14.63	15.52	12.32	13.44	13.05	14.19	15.08
	3H	14.44	15.45	15.18	16.21	17.13	13.96	14.97	14.70	15.72	16.65
	4H	15.04	15.99	15.80	16.76	17.70	14.56	15.51	15.32	16.27	17.21
	6H	15.46	16.34	16.23	17.11	18.06	14.97	15.84	15.74	16.62	17.57
	8H	15.57	16.41	16.36	17.20	18.16	15.08	15.92	15.86	16.71	17.66
	12H	15.63	16.43	16.42	17.22	18.20	15.13	15.93	15.92	16.72	17.70
4H	2H	13.25	14.20	14.02	14.97	15.91	12.90	13.85	13.66	14.62	15.56
	3H	15.15	15.94	15.92	16.74	17.70	14.74	15.54	15.52	16.34	17.29
	4H	15.87	16.59	16.66	17.40	18.38	15.45	16.18	16.24	16.98	17.96
	6H	16.41	17.03	17.21	17.86	18.85	15.98	16.61	16.79	17.43	18.42
	8H	16.56	17.15	17.37	17.97	18.97	16.13	16.72	16.94	17.54	18.54
	12H	16.65	17.18	17.48	18.02	19.03	16.21	16.73	17.04	17.58	18.59
8H	4H	16.09	16.67	16.90	17.50	18.50	15.72	16.30	16.53	17.13	18.13
	6H	16.74	17.22	17.58	18.08	19.09	16.36	16.84	17.20	17.71	18.71
	8H	16.96	17.39	17.81	18.25	19.27	16.58	17.01	17.43	17.87	18.89
	12H	17.11	17.49	17.96	18.34	19.41	16.70	17.08	17.56	17.94	19.01
12H	4H	16.09	16.61	16.92	17.46	18.47	15.73	16.25	16.56	17.10	18.10
	6H	16.77	17.20	17.62	18.06	19.08	16.40	16.83	17.25	17.70	18.71
	8H	17.02	17.40	17.88	18.26	19.33	16.65	17.03	17.51	17.88	18.96

END OF REPORT