

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: P919720

Luminaire Tested: DFN2DIP-PN4F0-090D110US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P919720
REPORT IS A COMBINATION OF REPORTS P899745 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-090D110US935-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

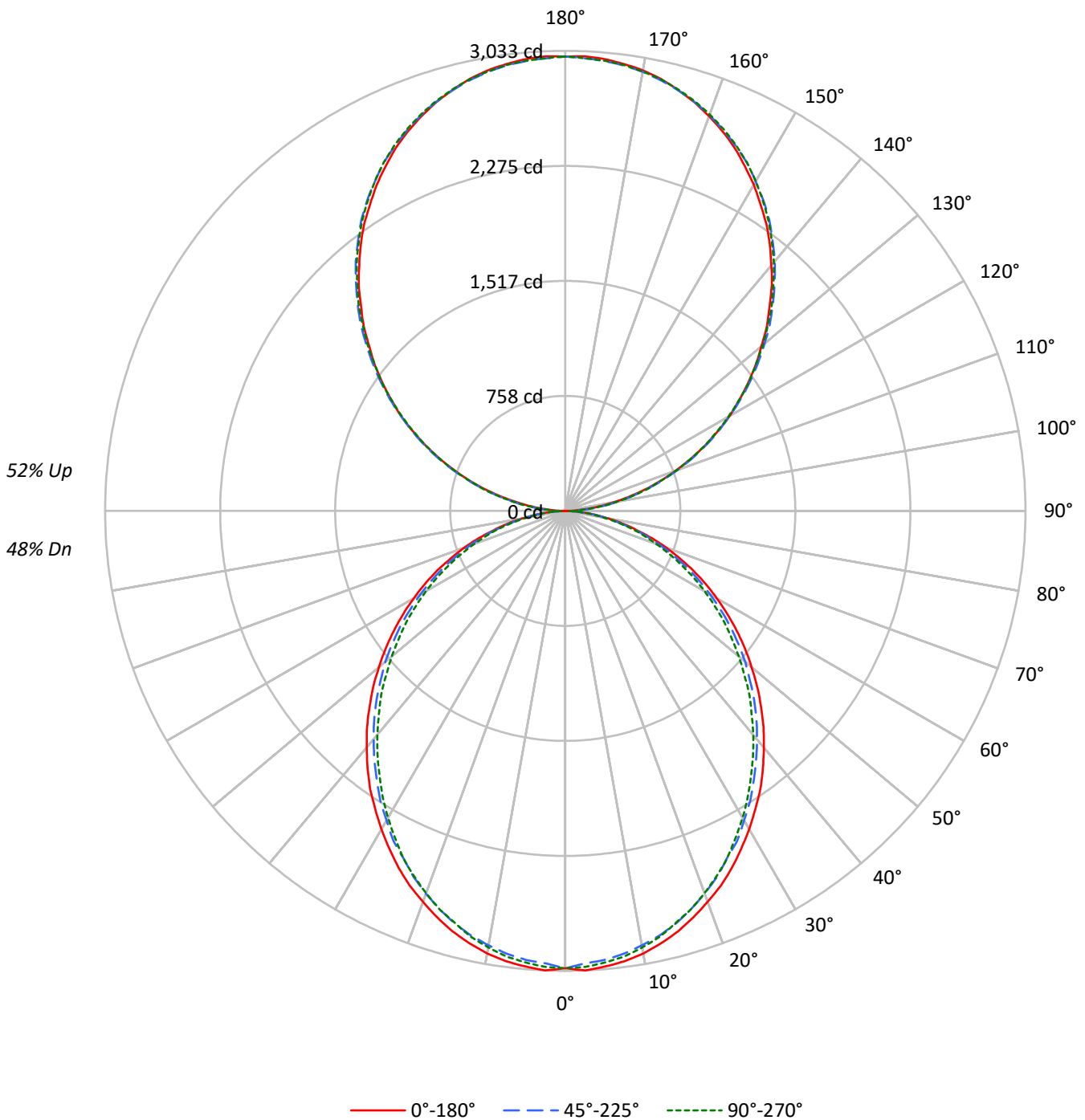
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16053.3 lumens
Efficiency: N/A
Efficacy: 89.2 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: General Diffuse

Input Watts (W): 180
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9963
Total Harmonic Distortion (THDi): 0.065
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	50	30	10	50	30	10	0																			
RCR																																														
0	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48	48	48	48	48	48	48	48	48	48	48																		
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46	40	40	40	40	40	40	40	40	40	40	40																		
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	38	34	34	34	34	34	34	34	34	34	34	34																		
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	37	35	33	29	29	29	29	29	29	29	29	29	29	29																		
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	31	28	25	25	25	25	25	25	25	25	25	25	25																		
5	68	56	48	42	62	52	45	40	44	39	34	37	33	29	30	27	25	21	21	21	21	21	21	21	21	21	21	21																		
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22	19	19	19	19	19	19	19	19	19	19	19																		
7	58	46	38	32	53	42	35	30	36	31	26	30	26	23	25	22	19	17	17	17	17	17	17	17	17	17	17	17																		
8	54	41	34	28	49	38	32	27	33	27	24	28	23	20	23	20	17	15	15	15	15	15	15	15	15	15	15	15																		
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16	13	13	13	13	13	13	13	13	13	13	13																		
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14	12	12	12	12	12	12	12	12	12	12	12																		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2201	2201	2201
5°	2204	2171	2185
10°	2187	2142	2156
15°	2154	2107	2110
20°	2111	2058	2063
25°	2068	2000	2009
30°	2014	1945	1940
35°	1962	1881	1867
40°	1899	1817	1797
45°	1836	1752	1726
50°	1767	1684	1643
55°	1695	1605	1568
60°	1613	1512	1481
65°	1525	1416	1378
70°	1411	1298	1269
75°	1255	1157	1168
80°	1066	977	974
85°	770	667	651

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2346 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	283.8	1.8
10°-20°	798.5	5.0
20°-30°	1173.4	7.3
30°-40°	1362.9	8.5
40°-50°	1361.2	8.5
50°-60°	1186.9	7.4
60°-70°	877.4	5.5
70°-80°	496.4	3.1
80°-90°	139.5	0.9
90°-100°	185.3	1.2
100°-110°	588.9	3.7
110°-120°	1007.8	6.3
120°-130°	1325.4	8.3
130°-140°	1487.7	9.3
140°-150°	1458.9	9.1
150°-160°	1223.8	7.6
160°-170°	811.6	5.1
170°-180°	283.7	1.8
0°-30°	2255.7	14.1
0°-40°	3618.6	22.5
0°-60°	6166.7	38.4
0°-90°	7680.0	47.8
90°-120°	1782.1	11.1
90°-150°	6054.2	37.7
90°-180°	8373.0	52.2
0°-180°	16053.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3015	3015	3015	3015	3015	
5°	3015	3004	2972	2995	2989	286
15°	2870	2853	2815	2827	2812	808
25°	2598	2575	2526	2531	2526	1195
35°	2241	2212	2166	2148	2134	1400
45°	1824	1804	1760	1728	1716	1408
55°	1380	1363	1328	1293	1279	1234
65°	931	913	884	858	844	920
75°	487	481	467	449	455	520
85°	119	116	113	104	102	132
90°	3	32	88	83	86	16
95°	132	157	162	162	157	147
105°	544	551	556	561	561	574
115°	1011	1026	1021	1019	1011	1000
125°	1471	1494	1486	1478	1476	1315
135°	1903	1931	1936	1933	1926	1471
145°	2310	2328	2342	2345	2335	1443
155°	2641	2648	2657	2669	2661	1216
165°	2873	2871	2871	2889	2876	811
175°	2990	2983	2977	2995	2980	284
180°	2995	2995	2995	2995	2995	



TEST NUMBER: P919720

CATALOG NUMBER: DFN2DIP-PN4F0-090D110US935-FLLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3015.1	3015.1	3015.1	3015.1	3015.1
2.5°	3032.7	3018.2	2986.3	3015.1	3009.6
5°	3015.1	3003.8	2971.8	2994.9	2989.3
7.5°	2994.9	2977.7	2945.6	2969.1	2963.2
10°	2963.2	2942.9	2908.1	2931.2	2922.6
12.5°	2919.5	2902.3	2867.6	2881.9	2876.2
15°	2870.3	2853.1	2815.2	2826.9	2812.4
17.5°	2809.3	2792.1	2754.3	2768.8	2754.3
20°	2742.6	2725.4	2684.8	2693.4	2682.0
22.5°	2676.2	2650.1	2612.2	2612.2	2606.3
25°	2597.7	2574.6	2525.5	2531.0	2525.5
27.5°	2510.7	2490.4	2452.9	2444.3	2429.8
30°	2424.0	2400.5	2357.2	2348.5	2336.9
32.5°	2331.1	2313.8	2267.4	2249.9	2238.2
35°	2241.3	2212.3	2165.8	2148.4	2133.9
37.5°	2139.8	2113.6	2067.1	2046.9	2032.4
40°	2035.4	2012.1	1965.6	1939.7	1928.1
42.5°	1933.9	1910.6	1864.4	1835.2	1818.0
45°	1823.8	1803.5	1759.8	1728.1	1716.5
47.5°	1716.5	1696.2	1649.7	1617.7	1600.5
50°	1603.3	1588.8	1548.2	1507.6	1493.1
52.5°	1493.1	1472.8	1435.3	1403.3	1383.0
55°	1380.3	1362.7	1327.9	1293.2	1278.8
57.5°	1267.0	1252.6	1214.8	1180.0	1168.3
60°	1153.8	1142.5	1101.8	1069.9	1061.3
62.5°	1043.7	1023.4	994.5	965.6	953.9
65°	930.8	913.3	884.3	858.2	843.8
67.5°	814.8	800.1	774.2	754.0	742.3
70°	707.5	695.8	669.7	649.4	638.0
72.5°	597.4	585.7	571.2	551.0	542.3
75°	487.0	481.4	466.7	449.4	455.3
77.5°	388.5	376.9	371.0	362.4	353.8
80°	290.1	287.0	281.1	272.5	266.7
82.5°	197.2	197.2	194.4	182.7	182.7
85°	118.7	116.0	113.2	104.3	101.5
87.5°	52.3	46.4	40.6	32.0	28.9
90°	2.7	32.5	88.5	83.1	85.8
92.5°	56.0	75.9	78.5	81.3	81.3
95°	131.8	157.1	161.6	161.6	157.1
97.5°	219.5	242.9	252.9	252.9	252.9
100°	320.5	341.3	348.5	348.5	345.9
102.5°	427.1	442.5	452.5	455.1	452.5
105°	543.6	550.9	556.3	560.8	560.8
107.5°	659.2	670.0	670.0	671.8	659.2
110°	771.2	785.7	785.7	785.7	778.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	892.2	907.5	904.8	897.6	892.2
115°	1011.4	1025.8	1021.3	1018.6	1011.4
117.5°	1129.7	1149.5	1136.9	1129.7	1122.5
120°	1248.9	1268.8	1248.9	1248.9	1240.8
122.5°	1357.3	1382.5	1369.8	1362.6	1357.3
125°	1471.0	1493.6	1486.3	1478.2	1475.5
127.5°	1582.1	1610.1	1600.2	1589.3	1582.1
130°	1685.9	1718.5	1713.9	1708.5	1698.6
132.5°	1802.4	1827.7	1829.5	1816.9	1809.6
135°	1902.6	1930.6	1936.0	1933.4	1926.1
137.5°	2014.6	2037.2	2041.7	2039.9	2029.1
140°	2113.1	2135.6	2148.3	2148.3	2138.4
142.5°	2214.2	2236.8	2244.0	2246.7	2236.8
145°	2309.9	2328.0	2342.4	2345.1	2335.2
147.5°	2395.7	2418.3	2429.1	2433.6	2423.7
150°	2484.2	2499.6	2509.5	2517.6	2509.5
152.5°	2562.8	2578.1	2590.7	2600.7	2590.7
155°	2641.4	2648.5	2656.7	2669.4	2661.2
157.5°	2709.0	2714.5	2718.9	2737.0	2724.4
160°	2769.6	2775.0	2777.7	2793.1	2782.2
162.5°	2825.5	2825.5	2828.3	2845.4	2832.8
165°	2873.4	2870.7	2870.7	2888.7	2876.1
167.5°	2916.7	2908.6	2908.6	2926.7	2914.0
170°	2949.3	2942.0	2939.4	2957.4	2942.0
172.5°	2971.8	2964.6	2961.9	2980.0	2964.6
175°	2989.9	2982.7	2977.2	2995.3	2980.0
177.5°	2999.8	2992.6	2987.1	3002.6	2987.1
180°	2995.3	2995.3	2995.3	2995.3	2995.3



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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	9.81	10.66	10.79	11.65	12.95	9.37	10.22	10.35	11.21	12.51
	3H	11.48	12.23	12.46	13.23	14.55	10.99	11.75	11.98	12.75	14.07
	4H	12.07	12.78	13.06	13.78	15.11	11.58	12.29	12.58	13.30	14.63
	6H	12.47	13.13	13.48	14.13	15.48	11.97	12.63	12.98	13.64	14.98
	8H	12.57	13.20	13.59	14.22	15.56	12.08	12.71	13.10	13.73	15.07
	12H	12.62	13.22	13.64	14.23	15.60	12.12	12.72	13.14	13.73	15.10
4H	2H	10.27	10.99	11.28	11.99	13.32	9.92	10.64	10.93	11.64	12.97
	3H	12.14	12.74	13.16	13.77	15.11	11.74	12.34	12.75	13.37	14.71
	4H	12.86	13.40	13.88	14.43	15.79	12.44	12.99	13.46	14.01	15.38
	6H	13.37	13.84	14.41	14.89	16.25	12.95	13.42	13.98	14.47	15.83
	8H	13.53	13.96	14.56	15.00	16.38	13.10	13.54	14.13	14.57	15.95
	12H	13.60	14.00	14.65	15.05	16.43	13.16	13.56	14.21	14.61	15.99
8H	4H	13.05	13.49	14.09	14.53	15.91	12.68	13.12	13.72	14.16	15.54
	6H	13.69	14.05	14.74	15.13	16.51	13.31	13.67	14.37	14.75	16.13
	8H	13.91	14.23	14.97	15.29	16.69	13.52	13.84	14.59	14.91	16.31
	12H	14.04	14.32	15.11	15.38	16.82	13.64	13.92	14.71	14.98	16.42
12H	4H	13.04	13.43	14.09	14.49	15.87	12.68	13.07	13.73	14.13	15.51
	6H	13.72	14.04	14.78	15.10	16.50	13.35	13.67	14.42	14.74	16.13
	8H	13.96	14.24	15.03	15.30	16.74	13.59	13.87	14.66	14.93	16.37