

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: P925180

Luminaire Tested: DFN2DIP-PN4F0-090D120US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

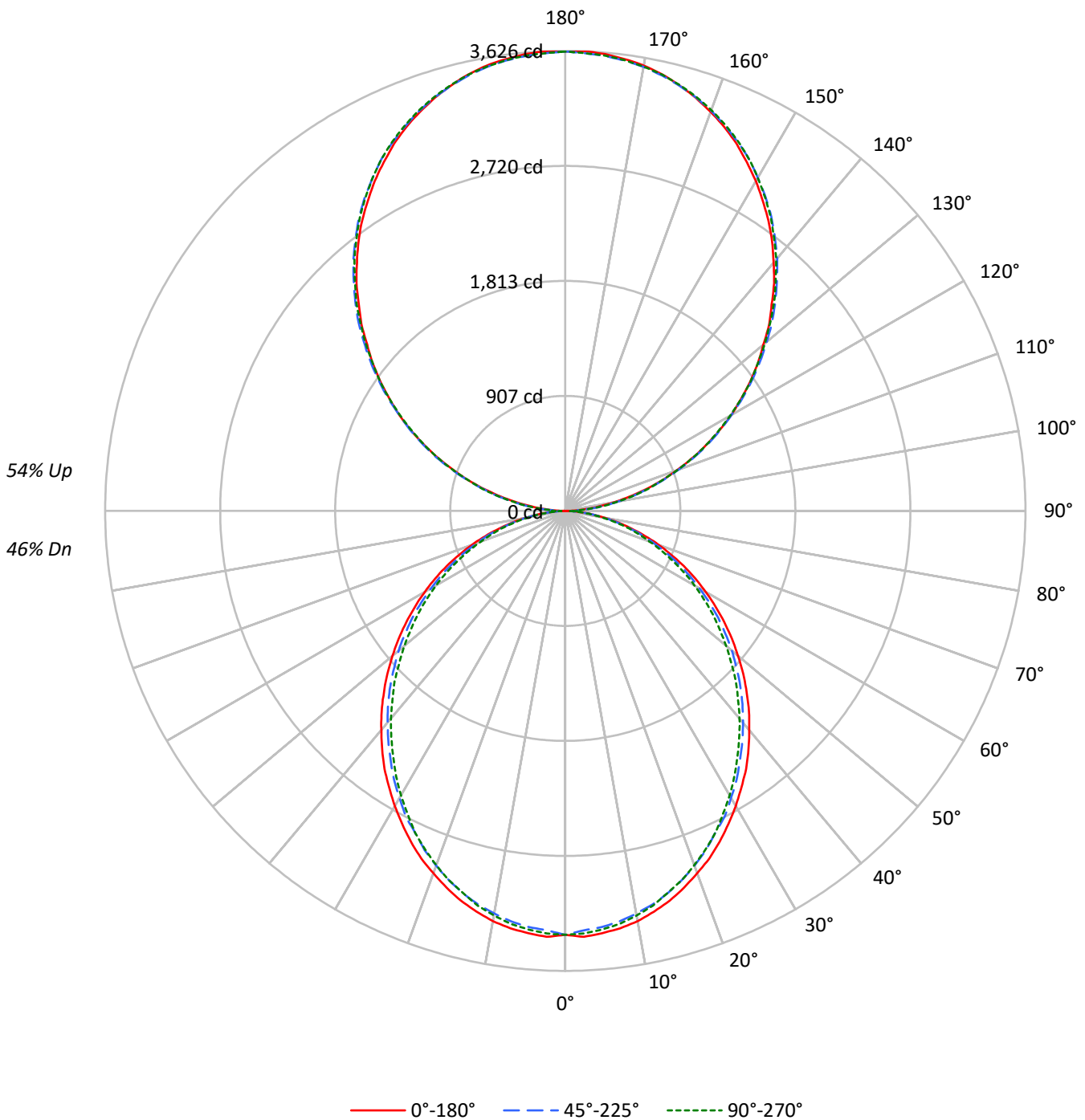
Test Method: LM-79-2019  
Report Number: P925180  
REPORT IS A COMBINATION OF REPORTS P899763 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-090D120US950-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18631.6 lumens  
Efficiency: N/A  
Efficacy: 97.1 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): 191.9  
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	0
RCR																					
0	106	106	106	106	97	97	97	97	81	81	81	66	66	66	52	52	52	46	46	46	46
1	97	93	89	85	89	85	82	79	71	69	66	58	56	55	46	45	44	38	38	38	38
2	88	81	75	70	81	74	69	65	62	58	55	51	48	46	41	39	37	32	32	32	32
3	80	71	64	58	73	65	59	54	55	50	46	45	42	39	36	34	32	27	27	27	27
4	74	63	55	49	67	58	51	46	49	43	39	40	36	33	32	29	27	23	23	23	23
5	67	56	48	42	62	52	45	39	44	38	34	36	32	29	29	26	24	20	20	20	20
6	62	50	42	36	57	46	39	34	39	34	30	33	28	25	26	23	21	18	18	18	18
7	57	45	37	32	53	42	35	30	36	30	26	30	25	22	24	21	19	16	16	16	16
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	17	14	14	14	14
9	50	37	30	25	45	35	28	24	30	24	21	25	21	18	20	17	15	13	13	13	13
10	46	34	27	22	42	32	25	21	27	22	19	23	19	16	19	16	14	12	12	12	12

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

	0°	45°	90°
0°	2439	2439	2439
5°	2443	2405	2421
10°	2423	2373	2389
15°	2387	2334	2338
20°	2339	2280	2286
25°	2291	2216	2226
30°	2231	2156	2149
35°	2174	2085	2068
40°	2104	2013	1991
45°	2034	1941	1912
50°	1958	1866	1821
55°	1878	1779	1737
60°	1788	1675	1641
65°	1689	1569	1527
70°	1564	1438	1406
75°	1390	1282	1294
80°	1181	1083	1079
85°	854	740	722

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2835 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	314.4	1.7
10°-20°	884.7	4.7
20°-30°	1300.2	7.0
30°-40°	1510.1	8.1
40°-50°	1508.2	8.1
50°-60°	1315.1	7.1
60°-70°	972.2	5.2
70°-80°	550.0	3.0
80°-90°	155.5	0.8
90°-100°	224.0	1.2
100°-110°	711.8	3.8
110°-120°	1218.2	6.5
120°-130°	1602.1	8.6
130°-140°	1798.3	9.7
140°-150°	1763.5	9.5
150°-160°	1479.3	7.9
160°-170°	981.0	5.3
170°-180°	342.9	1.8
0°-30°	2499.3	13.4
0°-40°	4009.4	21.5
0°-60°	6832.8	36.7
0°-90°	8510.4	45.7
90°-120°	2154.1	11.6
90°-150°	7318.0	39.3
90°-180°	10121.0	54.3
0°-180°	18631.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3341	3341	3341	3341	3341	
5°	3341	3328	3293	3318	3312	317
15°	3180	3161	3119	3132	3116	896
25°	2878	2853	2798	2804	2798	1324
35°	2483	2451	2400	2380	2364	1551
45°	2021	1998	1950	1915	1902	1560
55°	1529	1510	1471	1433	1417	1367
65°	1031	1012	980	951	935	1020
75°	540	533	517	498	504	576
85°	132	128	126	116	112	147
90°	3	39	107	100	104	18
95°	159	190	195	195	190	177
105°	657	666	672	678	678	693
115°	1222	1240	1234	1231	1222	1209
125°	1778	1805	1797	1787	1784	1589
135°	2300	2334	2340	2337	2328	1778
145°	2792	2814	2831	2835	2823	1745
155°	3193	3201	3211	3226	3217	1470
165°	3473	3470	3470	3492	3476	980
175°	3614	3605	3599	3620	3602	343
180°	3620	3620	3620	3620	3620	



TEST NUMBER: P925180

CATALOG NUMBER: DFN2DIP-PN4F0-090D120US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3340.8	3340.8	3340.8	3340.8	3340.8
2.5°	3360.3	3344.2	3308.9	3340.8	3334.7
5°	3340.8	3328.2	3292.8	3318.4	3312.2
7.5°	3318.4	3299.3	3263.8	3289.8	3283.3
10°	3283.3	3260.8	3222.2	3247.8	3238.3
12.5°	3234.8	3215.7	3177.3	3193.2	3186.8
15°	3180.3	3161.3	3119.3	3132.3	3116.2
17.5°	3112.8	3093.7	3051.8	3067.9	3051.8
20°	3038.9	3019.8	2974.8	2984.3	2971.7
22.5°	2965.2	2936.3	2894.3	2894.3	2887.9
25°	2878.3	2852.7	2798.3	2804.4	2798.3
27.5°	2781.9	2759.3	2717.9	2708.3	2692.3
30°	2685.8	2659.8	2611.8	2602.2	2589.3
32.5°	2582.9	2563.8	2512.3	2492.9	2479.9
35°	2483.4	2451.3	2399.8	2380.4	2364.4
37.5°	2370.9	2341.9	2290.4	2267.9	2251.9
40°	2255.3	2229.4	2177.9	2149.3	2136.4
42.5°	2142.8	2116.9	2065.8	2033.5	2014.4
45°	2020.8	1998.3	1949.9	1914.8	1901.9
47.5°	1901.9	1879.4	1827.9	1792.5	1773.4
50°	1776.4	1760.4	1715.4	1670.5	1654.4
52.5°	1654.4	1631.9	1590.3	1554.9	1532.4
55°	1529.4	1509.9	1471.4	1432.9	1416.9
57.5°	1403.9	1387.9	1346.0	1307.5	1294.5
60°	1278.5	1265.9	1220.8	1185.4	1175.9
62.5°	1156.4	1133.9	1101.9	1069.9	1056.9
65°	1031.4	1011.9	979.9	950.9	934.9
67.5°	902.9	886.6	857.8	835.4	822.4
70°	783.9	770.9	742.0	719.5	706.9
72.5°	661.9	648.9	632.9	610.5	600.9
75°	539.6	533.4	517.1	498.0	504.5
77.5°	430.4	417.6	411.1	401.5	392.0
80°	321.4	318.0	311.5	301.9	295.5
82.5°	218.5	218.5	215.4	202.4	202.4
85°	131.6	128.5	125.5	115.5	112.5
87.5°	57.9	51.4	45.0	35.5	32.1
90°	3.2	39.3	106.9	100.5	103.7
92.5°	67.6	91.7	94.9	98.3	98.3
95°	159.3	189.9	195.4	195.4	189.9
97.5°	265.2	293.6	305.7	305.7	305.7
100°	387.5	412.6	421.3	421.3	418.0
102.5°	516.3	534.8	546.8	550.2	546.8
105°	657.1	665.8	672.4	677.8	677.8
107.5°	796.8	809.9	809.9	812.0	796.8
110°	932.2	949.6	949.6	949.6	940.9



TEST NUMBER: P925180

CATALOG NUMBER: DFN2DIP-PN4F0-090D120US950-FLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1078.4	1097.0	1093.7	1085.0	1078.4
115°	1222.5	1240.0	1234.5	1231.2	1222.5
117.5°	1365.5	1389.5	1374.2	1365.5	1356.8
120°	1509.6	1533.6	1509.6	1509.6	1499.8
122.5°	1640.6	1671.1	1655.9	1647.1	1640.6
125°	1778.1	1805.3	1796.7	1786.8	1783.5
127.5°	1912.4	1946.2	1934.1	1921.1	1912.4
130°	2037.8	2077.1	2071.7	2065.1	2053.1
132.5°	2178.6	2209.3	2211.4	2196.1	2187.4
135°	2299.8	2333.7	2340.3	2336.9	2328.2
137.5°	2435.2	2462.5	2467.9	2465.7	2452.6
140°	2554.1	2581.4	2596.7	2596.7	2584.7
142.5°	2676.4	2703.7	2712.4	2715.7	2703.7
145°	2792.1	2813.9	2831.4	2834.7	2822.7
147.5°	2895.8	2923.1	2936.2	2941.7	2929.6
150°	3002.8	3021.3	3033.3	3043.2	3033.3
152.5°	3097.7	3116.2	3131.6	3143.6	3131.6
155°	3192.7	3201.4	3211.3	3226.5	3216.7
157.5°	3274.6	3281.1	3286.5	3308.4	3293.1
160°	3347.7	3354.3	3357.5	3376.1	3362.9
162.5°	3415.3	3415.3	3418.7	3439.4	3424.1
165°	3473.2	3470.0	3470.0	3491.7	3476.5
167.5°	3525.6	3515.8	3515.8	3537.6	3522.4
170°	3564.9	3556.1	3552.9	3574.7	3556.1
172.5°	3592.2	3583.4	3580.2	3602.0	3583.4
175°	3614.0	3605.3	3598.8	3620.5	3602.0
177.5°	3626.1	3617.3	3610.7	3629.3	3610.7
180°	3620.5	3620.5	3620.5	3620.5	3620.5



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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	9.96	10.78	10.95	11.79	13.12	9.52	10.34	10.51	11.35	12.68
	3H	11.62	12.36	12.63	13.37	14.73	11.14	11.88	12.14	12.89	14.24
	4H	12.21	12.91	13.23	13.93	15.29	11.72	12.42	12.74	13.44	14.80
	6H	12.61	13.25	13.64	14.28	15.65	12.12	12.76	13.14	13.78	15.16
	8H	12.71	13.33	13.75	14.37	15.73	12.22	12.84	13.25	13.87	15.24
	12H	12.76	13.35	13.80	14.38	15.77	12.26	12.85	13.30	13.88	15.27
4H	2H	10.42	11.12	11.44	12.13	13.50	10.07	10.77	11.09	11.78	13.14
	3H	12.28	12.87	13.32	13.91	15.29	11.88	12.47	12.91	13.51	14.88
	4H	13.00	13.53	14.04	14.57	15.97	12.58	13.12	13.62	14.15	15.55
	6H	13.51	13.97	14.56	15.04	16.43	13.09	13.55	14.14	14.61	16.00
	8H	13.66	14.09	14.71	15.15	16.56	13.24	13.67	14.29	14.72	16.13
	12H	13.74	14.13	14.81	15.19	16.61	13.30	13.69	14.37	14.75	16.17
8H	4H	13.19	13.62	14.24	14.68	16.08	12.82	13.25	13.87	14.30	15.71
	6H	13.83	14.18	14.90	15.28	16.68	13.45	13.80	14.52	14.90	16.30
	8H	14.05	14.36	15.13	15.44	16.86	13.66	13.98	14.74	15.05	16.48
	12H	14.18	14.45	15.26	15.53	16.99	13.78	14.05	14.86	15.13	16.59
12H	4H	13.18	13.56	14.24	14.63	16.05	12.81	13.20	13.88	14.27	15.68
	6H	13.86	14.17	14.94	15.25	16.67	13.49	13.80	14.57	14.88	16.31
	8H	14.10	14.37	15.18	15.45	16.91	13.73	14.00	14.81	15.07	16.54