

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: P908772

Luminaire Tested: DFN2DIP-PN4F0-080D110US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

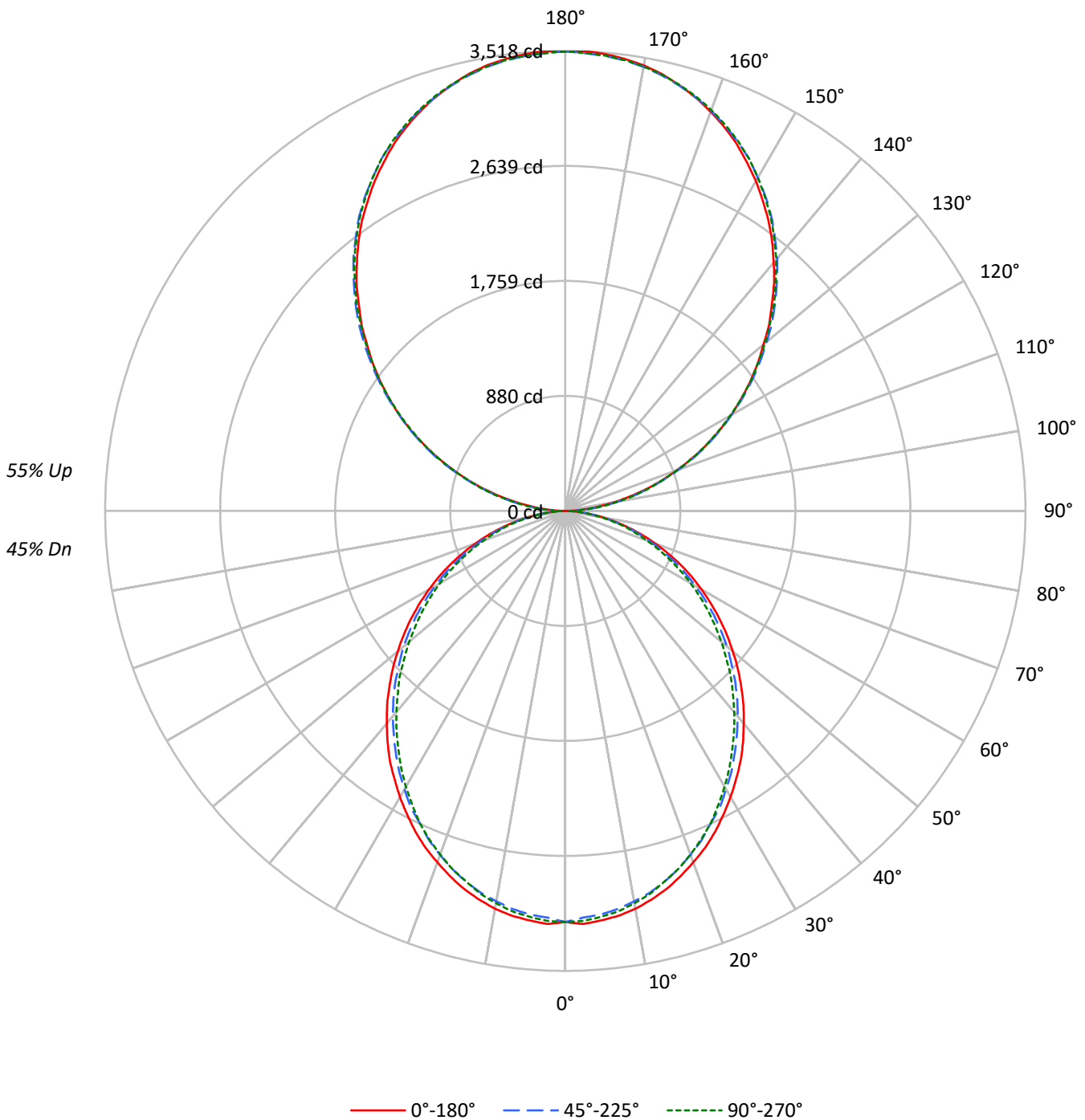
Test Method: LM-79-2019  
Report Number: P908772  
REPORT IS A COMBINATION OF REPORTS P899743 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-080D110US840-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17829.2 lumens  
Efficiency: N/A  
Efficacy: 105.6 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: General Diffuse  
  
Input Watts (W): 168.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P908772  
CATALOG NUMBER: DFN2DIP-PN4F0-080D110US840-FLLFLL

### Luminous Intensity Polar Plot





TEST NUMBER: P908772

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US840-FLLFLL

**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	65	65	65	51	51	51	45	45	45	45
1	97	92	88	85	88	85	81	78	71	68	66	57	56	54	45	44	43	38	38	38	38
2	88	81	75	69	80	74	69	64	62	58	55	50	48	45	40	38	37	32	32	32	32
3	80	71	64	58	73	65	59	54	55	50	46	45	41	38	35	33	31	27	27	27	27
4	73	63	55	49	67	58	51	46	48	43	39	40	36	33	32	29	27	23	23	23	23
5	67	56	48	42	61	51	44	39	43	38	34	36	32	28	29	26	23	20	20	20	20
6	62	50	42	36	57	46	39	34	39	33	29	32	28	25	26	23	21	18	18	18	18
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	24	21	18	16	16	16	16
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	16	14	14	14	14
9	49	37	30	25	45	35	28	23	29	24	21	25	21	18	20	17	15	13	13	13	13
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	19	16	13	11	11	11	11

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

	0°	45°	90°
0°	2295	2295	2295
5°	2298	2263	2278
10°	2280	2233	2248
15°	2246	2196	2200
20°	2201	2146	2151
25°	2156	2085	2095
30°	2099	2028	2022
35°	2046	1962	1946
40°	1980	1894	1873
45°	1914	1827	1799
50°	1842	1756	1713
55°	1767	1674	1634
60°	1682	1576	1544
65°	1590	1476	1437
70°	1472	1353	1322
75°	1308	1206	1217
80°	1112	1020	1015
85°	804	696	679

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2750 cd/sqm



TEST NUMBER: P908772

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US840-FLLFLL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	295.9	1.7
10°-20°	832.5	4.7
20°-30°	1223.4	6.9
30°-40°	1420.9	8.0
40°-50°	1419.1	8.0
50°-60°	1237.5	6.9
60°-70°	914.7	5.1
70°-80°	517.6	2.9
80°-90°	146.6	0.8
90°-100°	217.4	1.2
100°-110°	690.8	3.9
110°-120°	1182.1	6.6
120°-130°	1554.6	8.7
130°-140°	1745.0	9.8
140°-150°	1711.2	9.6
150°-160°	1435.4	8.1
160°-170°	951.9	5.3
170°-180°	332.7	1.9
0°-30°	2351.8	13.2
0°-40°	3772.7	21.2
0°-60°	6429.3	36.1
0°-90°	8008.1	44.9
90°-120°	2090.2	11.7
90°-150°	7101.0	39.8
90°-180°	9821.0	55.1
0°-180°	17829.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3144	3144	3144	3144	3144	
5°	3144	3132	3098	3122	3117	298
15°	2992	2975	2935	2947	2932	843
25°	2708	2684	2633	2639	2633	1246
35°	2337	2306	2258	2240	2225	1459
45°	1902	1880	1835	1802	1790	1467
55°	1439	1421	1384	1348	1333	1287
65°	970	952	922	895	880	959
75°	508	502	487	469	475	542
85°	124	121	118	109	106	138
90°	3	38	104	98	101	17
95°	155	184	190	190	184	172
105°	638	646	652	658	658	673
115°	1186	1203	1198	1195	1186	1173
125°	1725	1752	1743	1734	1731	1542
135°	2232	2264	2271	2268	2259	1725
145°	2709	2730	2747	2751	2739	1693
155°	3098	3106	3116	3131	3121	1426
165°	3370	3367	3367	3388	3373	951
175°	3507	3498	3492	3513	3495	333
180°	3513	3513	3513	3513	3513	



TEST NUMBER: P908772

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US840-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3143.5	3143.5	3143.5	3143.5	3143.5
2.5°	3161.8	3146.7	3113.4	3143.5	3137.8
5°	3143.5	3131.7	3098.4	3122.4	3116.6
7.5°	3122.4	3104.4	3071.1	3095.4	3089.4
10°	3089.4	3068.2	3031.9	3056.0	3047.1
12.5°	3043.8	3025.9	2989.6	3004.7	2998.6
15°	2992.5	2974.6	2935.1	2947.3	2932.2
17.5°	2929.0	2911.0	2871.6	2886.7	2871.6
20°	2859.4	2841.5	2799.1	2808.1	2796.2
22.5°	2790.2	2762.9	2723.4	2723.4	2717.3
25°	2708.4	2684.3	2633.0	2638.8	2633.0
27.5°	2617.6	2596.5	2557.3	2548.3	2533.2
30°	2527.2	2502.7	2457.6	2448.6	2436.4
32.5°	2430.3	2412.4	2363.9	2345.6	2333.5
35°	2336.6	2306.5	2258.1	2239.8	2224.7
37.5°	2230.8	2203.5	2155.2	2133.9	2118.9
40°	2122.1	2097.7	2049.3	2022.4	2010.1
42.5°	2016.3	1991.9	1943.8	1913.3	1895.4
45°	1901.5	1880.3	1834.7	1801.7	1789.6
47.5°	1789.6	1768.4	1719.9	1686.6	1668.6
50°	1671.5	1656.5	1614.1	1571.8	1556.7
52.5°	1556.7	1535.5	1496.4	1463.1	1441.9
55°	1439.0	1420.7	1384.5	1348.3	1333.1
57.5°	1321.0	1306.0	1266.5	1230.2	1218.0
60°	1203.0	1191.1	1148.7	1115.4	1106.4
62.5°	1088.1	1067.0	1036.8	1006.7	994.5
65°	970.5	952.2	922.0	894.7	879.7
67.5°	849.5	834.1	807.2	786.1	773.9
70°	737.6	725.4	698.2	677.0	665.1
72.5°	622.8	610.7	595.5	574.4	565.4
75°	507.7	501.9	486.6	468.6	474.6
77.5°	405.1	392.8	386.8	377.8	368.8
80°	302.5	299.2	293.2	284.2	278.0
82.5°	205.6	205.6	202.7	190.5	190.5
85°	123.8	120.9	118.1	108.8	105.8
87.5°	54.5	48.5	42.3	33.3	30.2
90°	3.1	38.2	103.8	97.5	100.6
92.5°	65.6	89.0	92.1	95.3	95.3
95°	154.6	184.3	189.6	189.6	184.3
97.5°	257.4	284.9	296.6	296.6	296.6
100°	376.0	400.3	408.8	408.8	405.7
102.5°	501.0	519.0	530.7	533.8	530.7
105°	637.6	646.1	652.5	657.7	657.7
107.5°	773.2	785.9	785.9	788.0	773.2
110°	904.5	921.5	921.5	921.5	913.0



TEST NUMBER: P908772

CATALOG NUMBER: DFN2DIP-PN4F0-080D110US840-FLLFLL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1046.4	1064.4	1061.3	1052.8	1046.4
115°	1186.3	1203.2	1197.9	1194.8	1186.3
117.5°	1325.0	1348.3	1333.4	1325.0	1316.6
120°	1464.8	1488.1	1464.8	1464.8	1455.3
122.5°	1592.0	1621.5	1606.7	1598.2	1592.0
125°	1725.4	1751.8	1743.3	1733.8	1730.6
127.5°	1855.6	1888.4	1876.8	1864.1	1855.6
130°	1977.4	2015.6	2010.2	2003.9	1992.3
132.5°	2114.1	2143.7	2145.9	2131.0	2122.5
135°	2231.6	2264.4	2270.8	2267.7	2259.2
137.5°	2363.0	2389.4	2394.7	2392.6	2380.0
140°	2478.4	2504.9	2519.7	2519.7	2508.1
142.5°	2597.1	2623.5	2632.0	2635.1	2623.5
145°	2709.3	2730.5	2747.4	2750.6	2739.0
147.5°	2810.0	2836.4	2849.1	2854.4	2842.8
150°	2913.8	2931.7	2943.4	2952.9	2943.4
152.5°	3005.9	3023.8	3038.7	3050.4	3038.7
155°	3098.1	3106.4	3116.0	3130.9	3121.3
157.5°	3177.4	3183.8	3189.1	3210.3	3195.4
160°	3248.4	3254.8	3257.9	3276.0	3263.3
162.5°	3314.1	3314.1	3317.3	3337.4	3322.6
165°	3370.2	3367.0	3367.0	3388.2	3373.4
167.5°	3421.0	3411.5	3411.5	3432.7	3417.9
170°	3459.2	3450.7	3447.6	3468.7	3450.7
172.5°	3485.7	3477.2	3474.0	3495.2	3477.2
175°	3506.9	3498.4	3492.0	3513.2	3495.2
177.5°	3518.5	3510.0	3503.6	3521.7	3503.6
180°	3513.2	3513.2	3513.2	3513.2	3513.2



TEST NUMBER: P908772  
 CATALOG NUMBER: DFN2DIP-PN4F0-080D110US840-FLLFLL

**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	9.67	10.49	10.67	11.50	12.84	9.23	10.05	10.23	11.06	12.40
	3H	11.33	12.07	12.34	13.09	14.45	10.85	11.58	11.86	12.60	13.96
	4H	11.92	12.62	12.94	13.64	15.01	11.43	12.13	12.46	13.15	14.52
	6H	12.32	12.96	13.35	13.99	15.37	11.83	12.47	12.86	13.50	14.88
	8H	12.43	13.03	13.46	14.08	15.46	11.93	12.54	12.97	13.59	14.96
	12H	12.47	13.05	13.52	14.09	15.49	11.97	12.55	13.02	13.59	14.99
4H	2H	10.13	10.82	11.16	11.85	13.22	9.78	10.47	10.81	11.50	12.87
	3H	12.00	12.57	13.03	13.63	15.01	11.59	12.17	12.63	13.22	14.61
	4H	12.71	13.24	13.75	14.28	15.69	12.29	12.82	13.34	13.87	15.27
	6H	13.23	13.68	14.28	14.75	16.15	12.80	13.26	13.85	14.32	15.72
	8H	13.38	13.80	14.43	14.86	16.28	12.95	13.37	14.00	14.43	15.85
	12H	13.45	13.83	14.52	14.91	16.33	13.01	13.39	14.08	14.47	15.89
8H	4H	12.90	13.33	13.96	14.39	15.80	12.53	12.96	13.59	14.02	15.43
	6H	13.54	13.89	14.61	14.99	16.40	13.16	13.51	14.24	14.61	16.03
	8H	13.76	14.07	14.84	15.15	16.59	13.37	13.68	14.46	14.77	16.20
	12H	13.89	14.16	14.98	15.24	16.72	13.49	13.76	14.58	14.84	16.31
12H	4H	12.89	13.27	13.96	14.35	15.77	12.52	12.91	13.60	13.98	15.40
	6H	13.57	13.88	14.65	14.96	16.39	13.20	13.51	14.29	14.59	16.03
	8H	13.81	14.08	14.90	15.16	16.63	13.44	13.71	14.52	14.79	16.26