

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: P903319

Luminaire Tested: DFN2DIP-PN4F0-080D110US830-RLLONL

Issue Date: 11/21/2024

**Test Information**

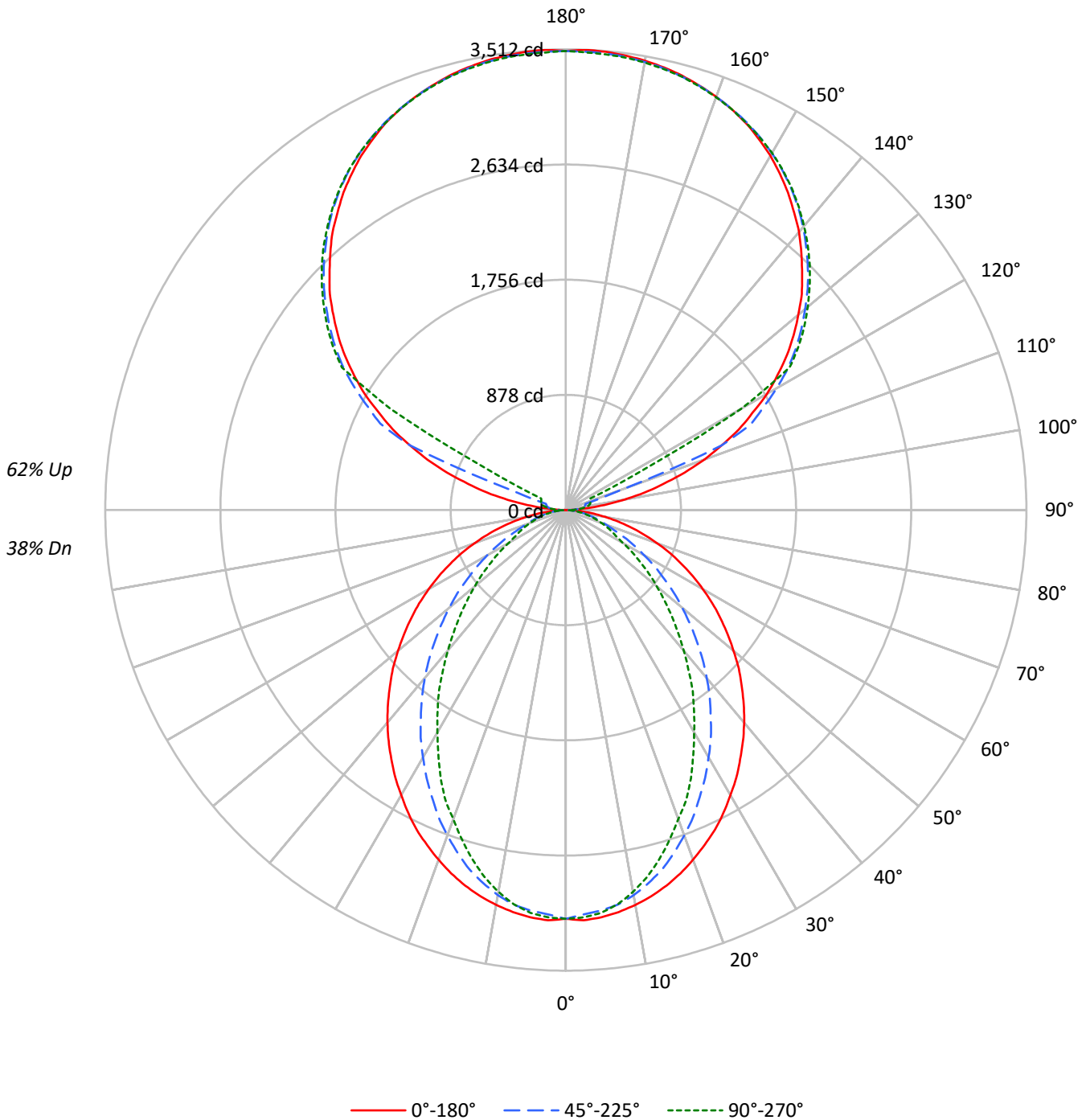
Test Method: LM-79-2019  
Report Number: P903319  
REPORT IS A COMBINATION OF REPORTS P901264 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-080D110US830-RLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16673.6 lumens  
Efficiency: N/A  
Efficacy: 98.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Indirect  
  
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

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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	104	104	104	104	95	95	95	95	77	77	77	61	61	61	46	46	46	38			
1	96	91	88	84	87	83	80	77	68	66	64	54	52	51	41	40	39	33			
2	87	80	74	70	79	73	68	64	60	56	53	48	45	43	36	35	34	28			
3	80	71	64	58	72	65	59	54	53	49	45	42	39	37	33	31	29	24			
4	73	63	55	50	66	58	51	46	47	43	39	38	35	32	29	27	25	21			
5	67	56	48	43	61	51	45	40	43	38	34	34	31	28	27	24	22	19			
6	62	50	43	37	56	46	39	35	38	33	30	31	27	25	24	22	20	17			
7	57	46	38	33	52	42	35	30	35	30	26	28	25	22	22	20	18	15			
8	53	41	34	29	48	38	32	27	32	27	23	26	22	20	20	18	16	13			
9	50	38	31	26	45	35	28	24	29	24	21	24	20	18	19	16	14	12			
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13	11			

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

	0°	45°	90°
0°	2275	2275	2275
5°	2278	2239	2253
10°	2256	2195	2181
15°	2225	2123	2068
20°	2184	2023	1929
25°	2142	1912	1795
30°	2085	1797	1625
35°	2030	1673	1475
40°	1974	1546	1304
45°	1908	1404	1148
50°	1840	1261	996
55°	1770	1108	851
60°	1688	948	701
65°	1594	785	631
70°	1480	634	572
75°	1337	559	521
80°	1129	470	453
85°	787	315	343

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1908 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	292.1	1.8
10°-20°	801.8	4.8
20°-30°	1125.7	6.8
30°-40°	1227.1	7.4
40°-50°	1127.8	6.8
50°-60°	885.7	5.3
60°-70°	576.5	3.5
70°-80°	296.8	1.8
80°-90°	81.9	0.5
90°-100°	115.4	0.7
100°-110°	430.1	2.6
110°-120°	1140.7	6.8
120°-130°	1892.0	11.3
130°-140°	2009.7	12.1
140°-150°	1867.8	11.2
150°-160°	1501.7	9.0
160°-170°	967.6	5.8
170°-180°	333.0	2.0
0°-30°	2219.6	13.3
0°-40°	3446.7	20.7
0°-60°	5460.2	32.7
0°-90°	6415.5	38.5
90°-120°	1686.2	10.1
90°-150°	7455.8	44.7
90°-180°	10258.0	61.5
0°-180°	16673.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3116	3116	3116	3116	3116	
5°	3116	3102	3066	3091	3083	296
15°	2964	2933	2837	2784	2756	835
25°	2691	2600	2414	2299	2256	1237
35°	2318	2174	1926	1749	1686	1451
45°	1895	1706	1410	1210	1142	1464
55°	1441	1221	916	747	694	1288
65°	973	744	491	395	386	965
75°	519	321	226	206	203	549
85°	121	62	54	54	54	139
90°	2	30	50	63	68	16
95°	164	81	99	112	109	195
105°	770	846	155	182	192	822
115°	1456	1499	1562	390	208	1433
125°	2058	2091	2140	2157	2165	1836
135°	2547	2588	2610	2636	2631	1968
145°	2955	2952	2995	3013	3000	1848
155°	3254	3231	3261	3276	3256	1499
165°	3428	3413	3421	3438	3421	969
175°	3506	3489	3494	3512	3486	334
180°	3499	3499	3499	3499	3499	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3116.4	3116.4	3116.4	3116.4	3116.4
2.5°	3130.5	3116.4	3085.3	3113.7	3108.0
5°	3116.4	3102.4	3065.5	3091.0	3082.6
7.5°	3091.0	3074.2	3034.7	3045.8	3031.7
10°	3057.1	3037.4	2981.2	2972.5	2955.7
12.5°	3015.0	2989.6	2913.2	2896.4	2865.3
15°	2964.1	2933.0	2837.2	2783.7	2755.5
17.5°	2904.8	2859.7	2741.2	2679.3	2634.0
20°	2837.2	2780.7	2639.8	2569.5	2507.2
22.5°	2763.9	2699.0	2535.3	2439.6	2397.4
25°	2690.6	2600.3	2414.1	2298.7	2256.2
27.5°	2603.2	2507.2	2301.3	2168.8	2103.8
30°	2510.2	2402.7	2177.2	2033.5	1957.2
32.5°	2419.8	2290.0	2059.0	1889.6	1819.0
35°	2318.4	2174.4	1926.4	1748.7	1686.4
37.5°	2219.6	2064.4	1802.2	1607.4	1537.1
40°	2115.3	1946.2	1672.4	1472.2	1398.8
42.5°	2008.1	1827.7	1542.8	1334.0	1263.6
45°	1895.3	1706.2	1410.2	1209.8	1142.2
47.5°	1788.2	1588.0	1283.4	1082.9	1021.0
50°	1669.6	1469.5	1159.2	964.4	905.4
52.5°	1553.9	1342.3	1040.7	854.6	801.1
55°	1441.1	1221.2	916.5	747.4	693.9
57.5°	1325.6	1099.9	806.7	648.8	603.5
60°	1207.0	981.5	690.9	547.2	502.1
62.5°	1091.6	865.9	592.2	456.9	434.5
65°	973.1	744.4	490.7	395.0	386.3
67.5°	860.3	631.7	395.0	346.8	338.5
70°	741.8	521.9	327.1	298.9	287.6
72.5°	629.0	420.1	273.5	251.1	245.3
75°	518.9	321.4	225.6	205.9	203.2
77.5°	409.1	228.3	177.8	166.4	160.7
80°	307.3	163.7	135.3	124.1	124.1
82.5°	214.2	110.1	93.0	87.4	87.4
85°	121.2	61.9	53.5	53.5	53.5
87.5°	45.1	22.4	22.4	19.8	19.8
90°	2.5	30.3	50.5	63.4	68.2
92.5°	63.4	53.3	60.7	65.9	68.2
95°	164.5	80.9	98.6	111.5	108.9
97.5°	296.1	88.7	128.9	136.8	139.2
100°	448.3	101.3	144.3	164.5	169.6
102.5°	615.1	610.3	149.4	177.1	184.9
105°	769.7	845.7	154.6	182.2	192.5
107.5°	949.5	1012.6	159.7	187.3	197.6
110°	1121.7	1174.7	443.2	190.0	199.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1283.8	1329.2	1286.2	194.8	202.6
115°	1455.8	1498.7	1562.3	389.9	207.7
117.5°	1605.2	1655.8	1699.0	1336.7	673.4
120°	1772.4	1810.2	1856.0	1886.3	1544.4
122.5°	1914.0	1954.5	2005.4	2020.4	2023.2
125°	2058.3	2091.4	2139.5	2157.2	2164.7
127.5°	2190.0	2225.4	2263.6	2288.9	2291.3
130°	2314.1	2354.8	2382.4	2410.4	2408.0
132.5°	2440.7	2473.8	2501.5	2524.3	2522.0
135°	2547.2	2587.7	2610.3	2635.9	2630.7
137.5°	2658.4	2688.8	2714.3	2739.6	2732.1
140°	2767.3	2787.7	2815.4	2838.2	2825.6
142.5°	2858.6	2876.4	2909.2	2929.3	2916.7
145°	2954.9	2952.1	2995.1	3012.9	3000.3
147.5°	3038.2	3030.7	3073.6	3086.3	3076.4
150°	3119.3	3101.6	3142.2	3157.2	3144.6
152.5°	3187.6	3167.4	3205.3	3220.7	3202.9
155°	3253.5	3230.8	3261.2	3276.3	3256.1
157.5°	3306.6	3286.5	3309.4	3327.1	3306.6
160°	3352.3	3337.0	3352.3	3367.3	3349.6
162.5°	3392.6	3377.6	3390.2	3408.0	3385.1
165°	3428.1	3413.0	3420.6	3438.3	3420.6
167.5°	3456.0	3440.8	3448.6	3466.3	3443.5
170°	3478.9	3463.6	3468.6	3486.5	3463.6
172.5°	3493.9	3478.9	3484.0	3501.7	3478.9
175°	3506.5	3488.8	3493.9	3511.7	3486.5
177.5°	3511.7	3493.9	3496.6	3514.4	3491.6
180°	3499.1	3499.1	3499.1	3499.1	3499.1



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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	8.83	9.57	9.89	10.63	12.06	4.79	5.54	5.85	6.59	8.02
	3H	10.50	11.17	11.57	12.23	13.68	5.98	6.64	7.04	7.71	9.16
	4H	11.11	11.74	12.19	12.81	14.26	6.42	7.05	7.50	8.12	9.58
	6H	11.53	12.11	12.62	13.18	14.65	6.74	7.32	7.83	8.39	9.86
	8H	11.65	12.21	12.75	13.29	14.75	6.83	7.38	7.92	8.47	9.93
	12H	11.72	12.24	12.81	13.32	14.80	6.87	7.39	7.97	8.47	9.96
4H	2H	8.84	9.47	9.92	10.53	11.99	5.38	6.01	6.46	7.08	8.53
	3H	10.66	11.19	11.75	12.28	13.75	6.72	7.25	7.81	8.34	9.81
	4H	11.35	11.83	12.45	12.92	14.41	7.27	7.75	8.37	8.83	10.32
	6H	11.87	12.28	12.97	13.39	14.87	7.69	8.10	8.79	9.20	10.69
	8H	12.04	12.43	13.14	13.52	15.02	7.81	8.20	8.92	9.30	10.79
	12H	12.13	12.48	13.25	13.59	15.10	7.87	8.22	8.99	9.33	10.84
8H	4H	11.31	11.70	12.42	12.80	14.30	7.55	7.93	8.65	9.03	10.53
	6H	11.88	12.20	13.01	13.34	14.83	8.06	8.38	9.19	9.52	11.01
	8H	12.10	12.38	13.23	13.50	15.01	8.25	8.53	9.38	9.65	11.17
	12H	12.24	12.48	13.37	13.60	15.15	8.37	8.61	9.50	9.73	11.28
12H	4H	11.26	11.61	12.38	12.72	14.22	7.55	7.89	8.67	9.01	10.51
	6H	11.86	12.13	12.99	13.26	14.77	8.11	8.39	9.24	9.51	11.03
	8H	12.07	12.32	13.21	13.44	14.99	8.32	8.56	9.45	9.68	11.23