

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: P903352

Luminaire Tested: DFN2DIP-PN4F0-090D110US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P903352
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-PN4F0-090D110US830-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

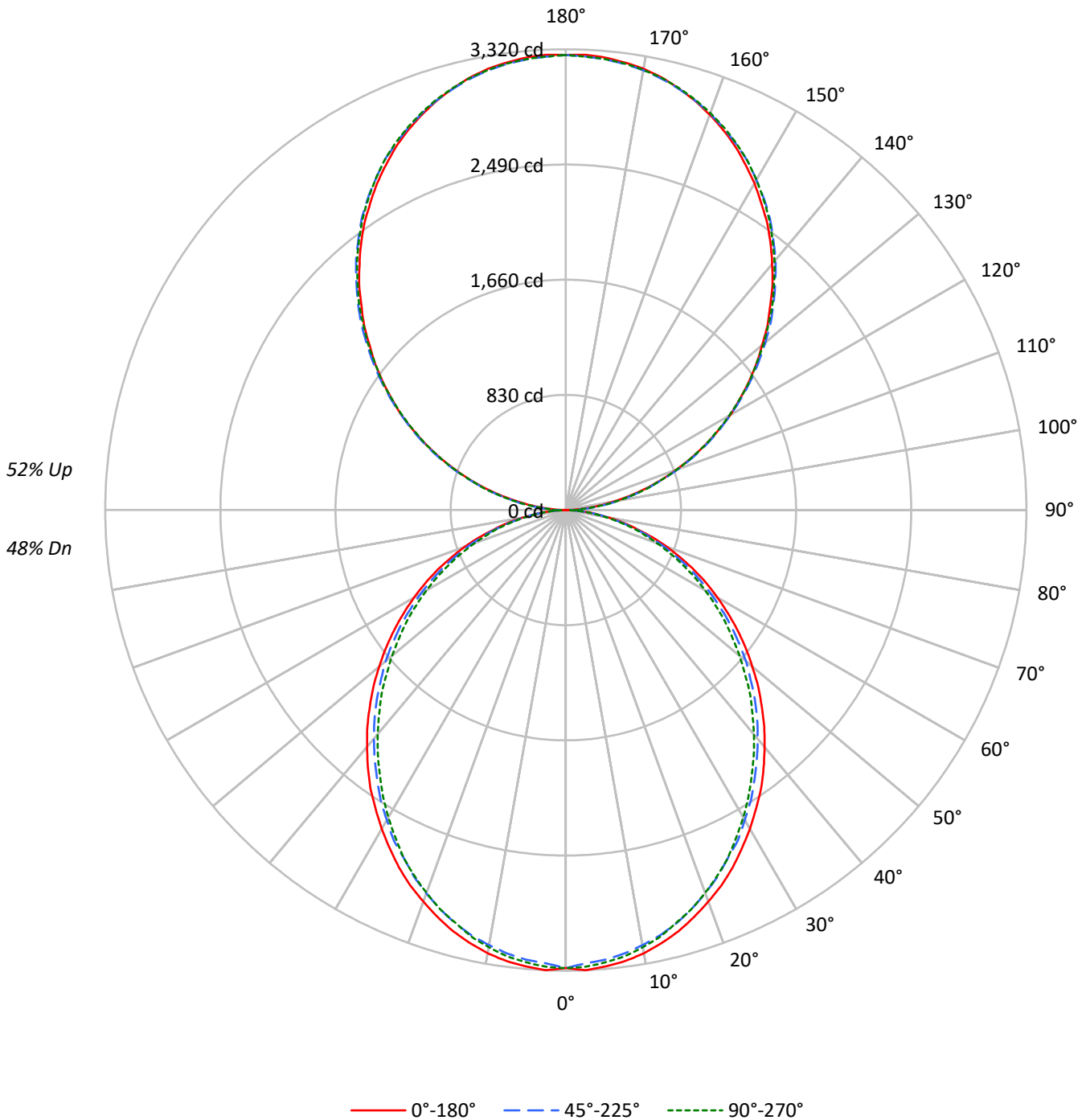
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17573.7 lumens
Efficiency: N/A
Efficacy: 97.6 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): 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
RCR																				
0	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48	48	
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46	40	40	
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	38	34	34	
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	37	35	33	29	29	
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	31	28	25	25	
5	68	56	48	42	62	52	45	40	44	39	34	37	33	29	30	27	25	21	21	
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22	19	19	
7	58	46	38	32	53	42	35	30	36	31	26	30	26	23	25	22	19	17	17	
8	54	41	34	28	49	38	32	27	33	27	24	28	23	20	23	20	17	15	15	
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16	13	13	
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14	12	12	

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2409	2409	2409
5°	2413	2376	2392
10°	2394	2344	2360
15°	2359	2306	2310
20°	2311	2253	2259
25°	2264	2189	2199
30°	2204	2130	2124
35°	2148	2060	2043
40°	2079	1989	1967
45°	2010	1918	1889
50°	1935	1844	1799
55°	1856	1758	1716
60°	1766	1655	1621
65°	1669	1550	1509
70°	1545	1421	1389
75°	1373	1267	1278
80°	1167	1070	1066
85°	844	730	713

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
 Vertical Angle: 90°
 Luminance: 2567 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	310.7	1.8
10°-20°	874.1	5.0
20°-30°	1284.6	7.3
30°-40°	1492.0	8.5
40°-50°	1490.1	8.5
50°-60°	1299.3	7.4
60°-70°	960.5	5.5
70°-80°	543.4	3.1
80°-90°	152.7	0.9
90°-100°	202.9	1.2
100°-110°	644.7	3.7
110°-120°	1103.3	6.3
120°-130°	1451.0	8.3
130°-140°	1628.6	9.3
140°-150°	1597.1	9.1
150°-160°	1339.7	7.6
160°-170°	888.5	5.1
170°-180°	310.5	1.8
0°-30°	2469.3	14.1
0°-40°	3961.3	22.5
0°-60°	6750.7	38.4
0°-90°	8407.4	47.8
90°-120°	1950.9	11.1
90°-150°	6627.6	37.7
90°-180°	9166.0	52.2
0°-180°	17573.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3301	3301	3301	3301	3301	
5°	3301	3288	3253	3278	3272	313
15°	3142	3123	3082	3095	3079	885
25°	2844	2818	2765	2771	2765	1309
35°	2454	2422	2371	2352	2336	1532
45°	1996	1974	1926	1892	1879	1541
55°	1511	1492	1454	1416	1400	1351
65°	1019	1000	968	940	924	1007
75°	533	527	511	492	498	569
85°	130	127	124	114	111	145
90°	3	36	97	91	94	17
95°	144	172	177	177	172	161
105°	595	603	609	614	614	628
115°	1107	1123	1118	1115	1107	1095
125°	1610	1635	1627	1618	1615	1439
135°	2083	2114	2119	2116	2109	1610
145°	2529	2548	2564	2567	2556	1580
155°	2892	2899	2908	2922	2913	1331
165°	3146	3142	3142	3162	3148	887
175°	3273	3265	3259	3279	3262	311
180°	3279	3279	3279	3279	3279	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3300.7	3300.7	3300.7	3300.7	3300.7
2.5°	3319.9	3304.1	3269.1	3300.7	3294.7
5°	3300.7	3288.2	3253.3	3278.5	3272.4
7.5°	3278.5	3259.7	3224.6	3250.3	3243.9
10°	3243.9	3221.6	3183.5	3208.8	3199.4
12.5°	3196.0	3177.1	3139.1	3154.9	3148.6
15°	3142.2	3123.3	3081.8	3094.6	3078.8
17.5°	3075.4	3056.6	3015.2	3031.0	3015.2
20°	3002.4	2983.5	2939.0	2948.5	2936.0
22.5°	2929.6	2901.1	2859.6	2859.6	2853.2
25°	2843.7	2818.5	2764.7	2770.7	2764.7
27.5°	2748.5	2726.2	2685.2	2675.8	2659.9
30°	2653.5	2627.9	2580.4	2571.0	2558.2
32.5°	2551.8	2533.0	2482.1	2463.0	2450.1
35°	2453.5	2421.9	2371.0	2351.8	2336.0
37.5°	2342.4	2313.8	2262.9	2240.7	2224.9
40°	2228.2	2202.6	2151.7	2123.5	2110.7
42.5°	2117.0	2091.5	2041.0	2009.0	1990.2
45°	1996.5	1974.3	1926.5	1891.8	1879.1
47.5°	1879.1	1856.8	1805.9	1770.9	1752.1
50°	1755.1	1739.3	1694.8	1650.4	1634.6
52.5°	1634.6	1612.3	1571.2	1536.2	1514.0
55°	1511.0	1491.8	1453.7	1415.7	1399.9
57.5°	1387.0	1371.2	1329.8	1291.8	1278.9
60°	1263.1	1250.7	1206.2	1171.2	1161.8
62.5°	1142.5	1120.3	1088.6	1057.1	1044.2
65°	1019.0	999.8	968.1	939.5	923.7
67.5°	892.0	875.9	847.5	825.4	812.6
70°	774.5	761.7	733.1	710.9	698.4
72.5°	653.9	641.1	625.3	603.1	593.7
75°	533.1	527.0	510.9	492.0	498.4
77.5°	425.3	412.6	406.1	396.7	387.3
80°	317.5	314.1	307.7	298.3	292.0
82.5°	215.8	215.8	212.8	200.0	200.0
85°	130.0	127.0	123.9	114.1	111.1
87.5°	57.2	50.8	44.5	35.1	31.7
90°	2.9	35.6	96.9	91.0	93.9
92.5°	61.3	83.0	86.0	89.0	89.0
95°	144.3	172.0	176.9	176.9	172.0
97.5°	240.3	265.9	276.8	276.8	276.8
100°	350.9	373.6	381.5	381.5	378.6
102.5°	467.6	484.4	495.3	498.2	495.3
105°	595.1	603.0	609.0	613.9	613.9
107.5°	721.6	733.5	733.5	735.5	721.6
110°	844.2	860.1	860.1	860.1	852.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	976.7	993.4	990.5	982.6	976.7
115°	1107.2	1122.9	1118.0	1115.1	1107.2
117.5°	1236.7	1258.4	1244.5	1236.7	1228.8
120°	1367.2	1388.9	1367.2	1367.2	1358.3
122.5°	1485.8	1513.4	1499.6	1491.7	1485.8
125°	1610.3	1635.0	1627.1	1618.3	1615.2
127.5°	1731.9	1762.6	1751.7	1739.8	1731.9
130°	1845.6	1881.2	1876.2	1870.3	1859.4
132.5°	1973.1	2000.8	2002.8	1989.0	1981.0
135°	2082.8	2113.5	2119.4	2116.5	2108.6
137.5°	2205.5	2230.1	2235.1	2233.1	2221.3
140°	2313.2	2337.9	2351.7	2351.7	2340.9
142.5°	2423.9	2448.6	2456.5	2459.5	2448.6
145°	2528.7	2548.4	2564.3	2567.2	2556.4
147.5°	2622.6	2647.3	2659.2	2664.1	2653.3
150°	2719.5	2736.3	2747.1	2756.1	2747.1
152.5°	2805.5	2822.3	2836.1	2847.0	2836.1
155°	2891.5	2899.4	2908.3	2922.2	2913.2
157.5°	2965.6	2971.6	2976.5	2996.2	2982.4
160°	3031.9	3037.8	3040.7	3057.6	3045.7
162.5°	3093.1	3093.1	3096.2	3114.9	3101.1
165°	3145.5	3142.5	3142.5	3162.3	3148.5
167.5°	3193.0	3184.1	3184.1	3203.9	3190.0
170°	3228.6	3220.7	3217.7	3237.4	3220.7
172.5°	3253.3	3245.4	3242.4	3262.2	3245.4
175°	3273.1	3265.2	3259.2	3279.0	3262.2
177.5°	3283.9	3276.0	3270.1	3286.9	3270.1
180°	3279.0	3279.0	3279.0	3279.0	3279.0



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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	10.13	10.97	11.10	11.96	13.26	9.69	10.53	10.66	11.52	12.82
	3H	11.79	12.55	12.78	13.54	14.87	11.31	12.06	12.29	13.06	14.38
	4H	12.38	13.09	13.38	14.10	15.43	11.89	12.61	12.89	13.61	14.94
	6H	12.78	13.44	13.79	14.45	15.79	12.29	12.95	13.30	13.95	15.30
	8H	12.89	13.51	13.90	14.54	15.88	12.39	13.02	13.41	14.04	15.38
	12H	12.94	13.53	13.96	14.55	15.91	12.44	13.03	13.46	14.05	15.41
4H	2H	10.59	11.30	11.59	12.31	13.64	10.24	10.95	11.24	11.95	13.29
	3H	12.46	13.05	13.47	14.08	15.43	12.05	12.65	13.07	13.68	15.03
	4H	13.17	13.72	14.19	14.74	16.11	12.75	13.30	13.78	14.32	15.69
	6H	13.69	14.16	14.72	15.20	16.57	13.26	13.73	14.30	14.78	16.14
	8H	13.84	14.28	14.87	15.32	16.70	13.41	13.85	14.44	14.89	16.27
	12H	13.91	14.31	14.97	15.36	16.75	13.47	13.87	14.53	14.92	16.31
8H	4H	13.37	13.81	14.40	14.85	16.22	13.00	13.44	14.03	14.47	15.85
	6H	14.00	14.36	15.06	15.44	16.82	13.62	13.99	14.68	15.07	16.45
	8H	14.22	14.54	15.29	15.61	17.00	13.84	14.16	14.90	15.22	16.62
	12H	14.36	14.64	15.43	15.70	17.14	13.95	14.24	15.02	15.30	16.73
12H	4H	13.35	13.75	14.40	14.80	16.19	12.99	13.39	14.04	14.44	15.83
	6H	14.03	14.35	15.10	15.42	16.81	13.67	13.99	14.73	15.05	16.45
	8H	14.27	14.56	15.34	15.62	17.05	13.90	14.18	14.97	15.24	16.68