

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: P903412

Luminaire Tested: DFN2DIP-PN4F0-110D080US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903412  
REPORT IS A COMBINATION OF REPORTS P899695 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-110D080US830-FLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

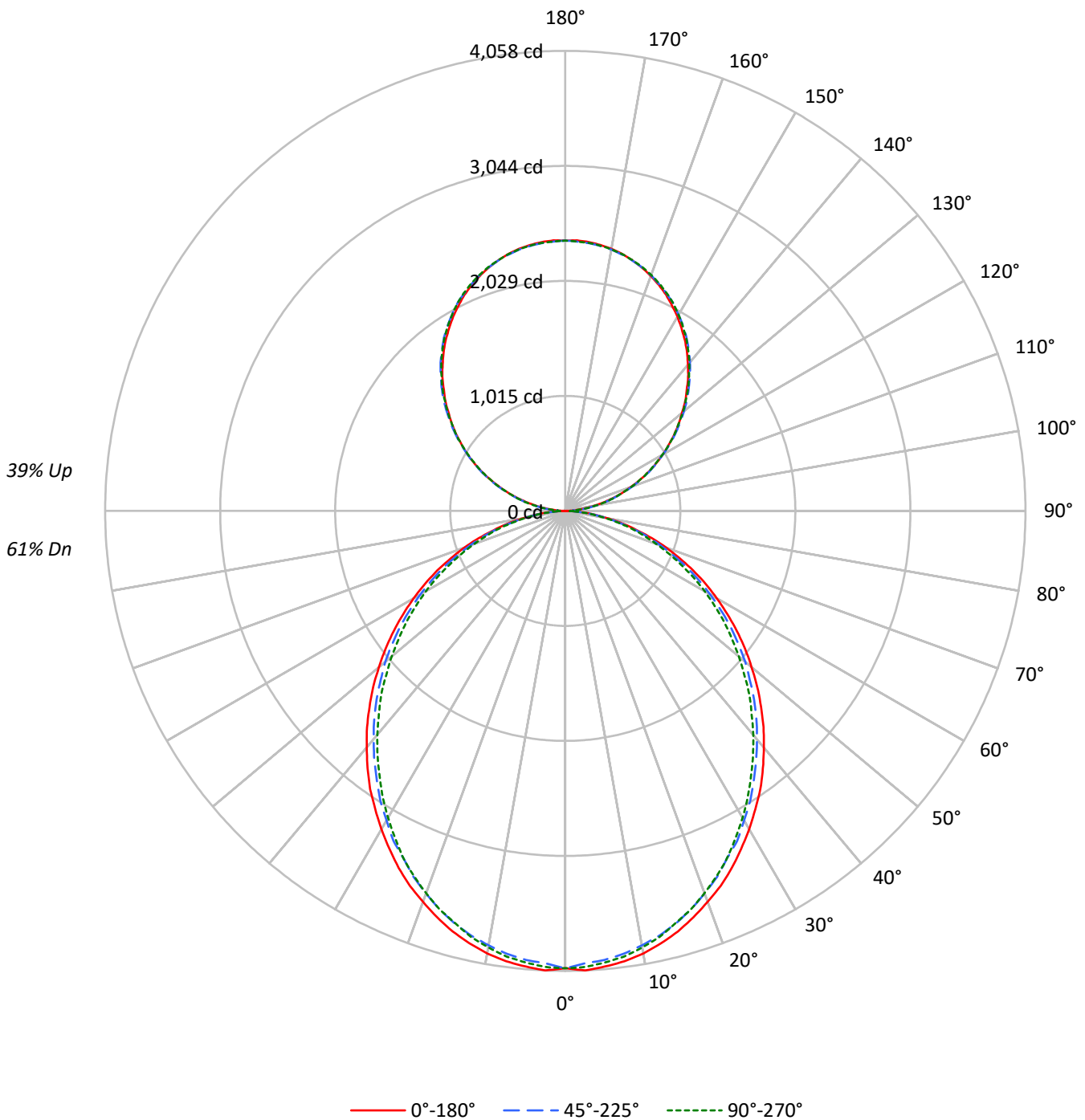
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16937.5 lumens  
Efficiency: N/A  
Efficacy: 98.4 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: Semi-Direct

Input Watts (W): 172.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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	110	110	110	110	103	103	103	103	89	89	89	77	77	77	66	66	66	66	66	61
1	100	96	92	88	94	90	86	83	78	76	73	68	66	64	58	57	56	56	56	51
2	91	84	77	72	85	78	73	68	69	64	61	60	56	54	51	49	47	47	47	43
3	83	74	66	60	78	69	62	57	61	55	51	53	49	45	45	42	40	40	40	36
4	76	65	57	51	71	61	54	48	54	48	44	47	43	39	41	37	34	34	34	31
5	70	58	50	44	65	55	47	42	48	42	38	42	38	34	37	33	30	30	30	27
6	65	52	44	38	60	49	42	36	44	38	33	38	33	30	33	29	26	26	26	24
7	60	47	39	33	56	45	37	32	40	34	29	35	30	26	30	27	24	24	24	21
8	55	43	35	30	52	41	33	28	36	30	26	32	27	24	28	24	21	21	21	19
9	52	39	32	27	48	37	30	25	33	27	23	29	25	21	26	22	19	19	19	17
10	48	36	29	24	45	34	27	23	31	25	21	27	23	19	24	20	17	17	17	15

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

	0°	45°	90°
0°	2945	2945	2945
5°	2950	2904	2924
10°	2926	2865	2885
15°	2883	2819	2824
20°	2824	2754	2761
25°	2767	2676	2688
30°	2694	2603	2595
35°	2625	2517	2498
40°	2541	2431	2404
45°	2457	2344	2309
50°	2364	2253	2199
55°	2268	2148	2097
60°	2159	2023	1981
65°	2040	1894	1844
70°	1889	1737	1697
75°	1678	1548	1562
80°	1426	1308	1303
85°	1031	893	871

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2457 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	379.7	2.2
10°-20°	1068.3	6.3
20°-30°	1570.0	9.3
30°-40°	1823.5	10.8
40°-50°	1821.2	10.8
50°-60°	1588.0	9.4
60°-70°	1173.9	6.9
70°-80°	664.2	3.9
80°-90°	182.1	1.1
90°-100°	147.6	0.9
100°-110°	468.9	2.8
110°-120°	802.4	4.7
120°-130°	1055.3	6.2
130°-140°	1184.5	7.0
140°-150°	1161.5	6.9
150°-160°	974.4	5.8
160°-170°	646.2	3.8
170°-180°	225.9	1.3
0°-30°	3018.1	17.8
0°-40°	4841.6	28.6
0°-60°	8250.9	48.7
0°-90°	10271.0	60.6
90°-120°	1418.8	8.4
90°-150°	4820.1	28.5
90°-180°	6666.0	39.4
0°-180°	16937.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4034	4034	4034	4034	4034	
5°	4034	4019	3976	4007	4000	383
15°	3840	3817	3767	3782	3763	1082
25°	3476	3445	3379	3386	3379	1599
35°	2999	2960	2898	2874	2855	1873
45°	2440	2413	2355	2312	2297	1883
55°	1847	1823	1777	1730	1711	1651
65°	1245	1222	1183	1148	1129	1231
75°	652	644	624	601	609	696
85°	159	155	152	140	136	177
90°	2	26	70	66	68	16
95°	105	125	129	129	125	117
105°	433	439	443	446	446	457
115°	805	817	813	811	805	796
125°	1171	1189	1183	1177	1175	1047
135°	1515	1537	1541	1539	1534	1171
145°	1839	1853	1865	1867	1859	1149
155°	2103	2109	2115	2125	2119	968
165°	2288	2286	2286	2300	2290	645
175°	2380	2375	2370	2385	2372	226
180°	2385	2385	2385	2385	2385	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4034.3	4034.3	4034.3	4034.3	4034.3
2.5°	4057.6	4038.3	3995.5	4034.3	4026.8
5°	4034.3	4019.0	3976.2	4007.0	3999.7
7.5°	4007.0	3984.0	3941.2	3972.5	3964.7
10°	3964.7	3937.5	3891.0	3921.8	3910.3
12.5°	3906.3	3883.2	3836.7	3856.0	3848.2
15°	3840.4	3817.3	3766.7	3782.3	3763.0
17.5°	3758.9	3735.9	3685.2	3704.6	3685.2
20°	3669.6	3646.5	3592.2	3603.7	3588.5
22.5°	3580.7	3545.7	3495.0	3495.0	3487.2
25°	3475.7	3444.9	3379.0	3386.5	3379.0
27.5°	3359.2	3332.1	3281.8	3270.3	3251.0
30°	3243.2	3211.9	3153.8	3142.3	3126.7
32.5°	3118.9	3095.9	3033.7	3010.2	2994.6
35°	2998.7	2960.1	2897.8	2874.4	2855.1
37.5°	2862.9	2827.9	2765.8	2738.6	2719.2
40°	2723.4	2692.1	2630.0	2595.4	2579.7
42.5°	2587.6	2556.3	2494.5	2455.4	2432.4
45°	2440.2	2413.0	2354.6	2312.2	2296.6
47.5°	2296.6	2269.5	2207.2	2164.5	2141.4
50°	2145.1	2125.8	2071.4	2017.1	1997.8
52.5°	1997.8	1970.6	1920.4	1877.5	1850.4
55°	1846.7	1823.3	1776.8	1730.2	1710.9
57.5°	1695.3	1675.9	1625.3	1578.8	1563.1
60°	1543.8	1528.6	1474.2	1431.4	1419.9
62.5°	1396.5	1369.3	1330.6	1291.9	1276.3
65°	1245.4	1221.9	1183.3	1148.3	1129.0
67.5°	1090.2	1070.5	1035.9	1008.8	993.2
70°	946.6	930.9	896.0	868.8	853.6
72.5°	799.3	783.6	764.3	737.2	725.6
75°	651.5	644.1	624.3	601.3	609.2
77.5°	519.8	504.2	496.3	484.8	473.3
80°	388.1	384.0	376.2	364.7	356.8
82.5°	263.8	263.8	260.1	244.5	244.5
85°	158.9	155.1	151.5	139.5	135.8
87.5°	69.9	62.1	54.3	42.8	38.6
90°	2.2	25.9	70.5	66.2	68.3
92.5°	44.6	60.4	62.6	64.7	64.7
95°	105.0	125.1	128.7	128.7	125.1
97.5°	174.7	193.4	201.3	201.3	201.3
100°	255.2	271.7	277.5	277.5	275.3
102.5°	340.1	352.3	360.1	362.3	360.1
105°	432.8	438.6	442.9	446.5	446.5
107.5°	524.8	533.5	533.5	534.9	524.8
110°	614.0	625.5	625.5	625.5	619.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	710.3	722.6	720.4	714.6	710.3
115°	805.2	816.7	813.1	811.0	805.2
117.5°	899.4	915.2	905.1	899.4	893.6
120°	994.3	1010.1	994.3	994.3	987.8
122.5°	1080.5	1100.7	1090.6	1084.9	1080.5
125°	1171.1	1189.1	1183.4	1176.9	1174.8
127.5°	1259.6	1281.9	1273.9	1265.4	1259.6
130°	1342.3	1368.1	1364.5	1360.3	1352.4
132.5°	1435.0	1455.1	1456.6	1446.5	1440.8
135°	1514.8	1537.1	1541.4	1539.3	1533.5
137.5°	1603.9	1621.9	1625.5	1624.1	1615.4
140°	1682.3	1700.3	1710.3	1710.3	1702.4
142.5°	1762.8	1780.8	1786.6	1788.8	1780.8
145°	1839.1	1853.4	1864.9	1867.1	1859.2
147.5°	1907.3	1925.3	1933.9	1937.6	1929.7
150°	1977.8	1990.0	1997.9	2004.4	1997.9
152.5°	2040.3	2052.6	2062.7	2070.6	2062.7
155°	2102.9	2108.7	2115.2	2125.2	2118.7
157.5°	2156.8	2161.2	2164.7	2179.1	2169.1
160°	2205.0	2209.3	2211.5	2223.6	2215.1
162.5°	2249.6	2249.6	2251.7	2265.4	2255.3
165°	2287.6	2285.5	2285.5	2299.9	2289.8
167.5°	2322.1	2315.7	2315.7	2330.1	2320.0
170°	2348.1	2342.3	2340.1	2354.6	2342.3
172.5°	2366.1	2360.3	2358.1	2372.5	2360.3
175°	2380.4	2374.6	2370.3	2384.7	2372.5
177.5°	2388.3	2382.6	2378.2	2390.5	2378.2
180°	2384.7	2384.7	2384.7	2384.7	2384.7



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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	11.96	12.92	12.82	13.81	14.92	11.52	12.48	12.38	13.37	14.48
	3H	13.63	14.50	14.50	15.39	16.52	13.14	14.01	14.02	14.90	16.04
	4H	14.22	15.04	15.11	15.94	17.09	13.74	14.56	14.62	15.45	16.60
	6H	14.63	15.39	15.53	16.29	17.45	14.14	14.89	15.04	15.80	16.96
	8H	14.74	15.46	15.65	16.38	17.54	14.25	14.97	15.16	15.89	17.05
	12H	14.79	15.48	15.71	16.39	17.58	14.29	14.98	15.21	15.89	17.08
4H	2H	12.43	13.25	13.33	14.15	15.30	12.08	12.90	12.97	13.80	14.94
	3H	14.31	14.99	15.21	15.92	17.09	13.91	14.59	14.81	15.52	16.68
	4H	15.03	15.66	15.95	16.58	17.77	14.61	15.24	15.53	16.16	17.35
	6H	15.56	16.09	16.48	17.04	18.23	15.13	15.67	16.06	16.62	17.81
	8H	15.71	16.21	16.64	17.16	18.36	15.28	15.78	16.21	16.73	17.93
	12H	15.79	16.24	16.74	17.20	18.41	15.35	15.80	16.30	16.76	17.97
8H	4H	15.24	15.74	16.17	16.68	17.89	14.87	15.37	15.80	16.31	17.51
	6H	15.88	16.29	16.83	17.28	18.48	15.50	15.92	16.46	16.90	18.10
	8H	16.10	16.47	17.07	17.44	18.66	15.71	16.08	16.68	17.06	18.28
	12H	16.24	16.56	17.21	17.53	18.80	15.84	16.16	16.81	17.13	18.40
12H	4H	15.23	15.68	16.18	16.64	17.85	14.87	15.32	15.82	16.28	17.49
	6H	15.91	16.28	16.87	17.25	18.47	15.54	15.91	16.51	16.89	18.10
	8H	16.16	16.48	17.13	17.45	18.72	15.78	16.11	16.75	17.08	18.34