

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: P908872

Luminaire Tested: DFN2DIP-PN4F0-110D090US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P908872
REPORT IS A COMBINATION OF REPORTS P899713 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D090US840-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

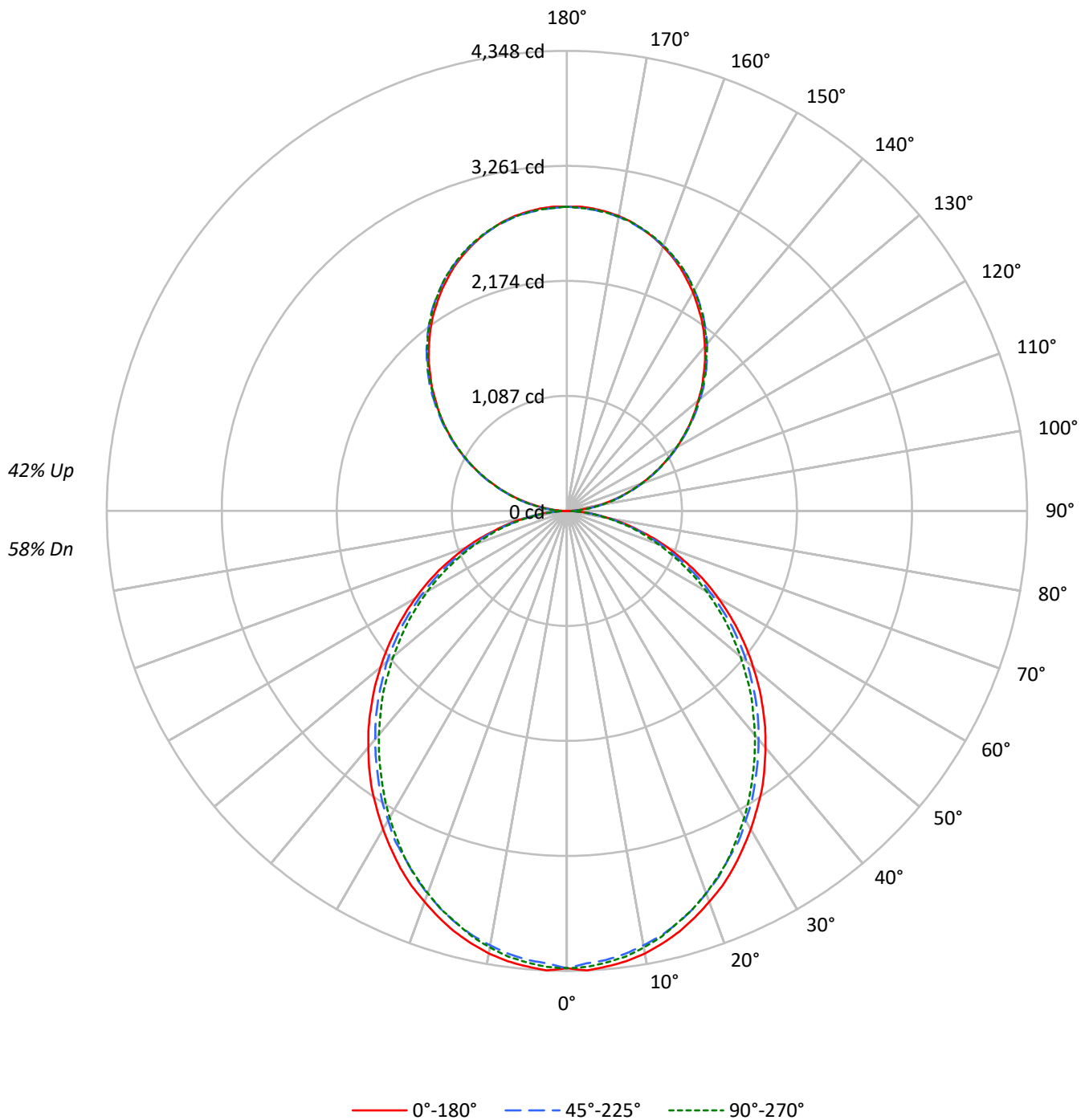
Lumens per Lamp: N/A
Luminaire Lumens: 19041.0 lumens
Efficiency: N/A
Efficacy: 105.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.9
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
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	109	109	109	109	102	102	102	102	88	88	88		75	75	75		63
1	100	95	91	88	93	89	85	82	77	74	72		66	64	62		56
2	91	83	77	72	84	78	72	68	67	63	60		58	55	52		49
3	83	73	66	60	77	68	62	56	59	54	50		51	47	44		44
4	76	65	57	51	70	61	53	48	53	47	43		46	41	38		39
5	70	58	49	43	65	54	47	41	47	42	37		41	36	33		35
6	64	52	44	38	60	49	41	36	43	37	32		37	32	29		32
7	59	47	39	33	55	44	37	32	39	33	29		34	29	26		29
8	55	43	35	29	51	40	33	28	35	30	25		31	26	23		27
9	51	39	31	26	48	37	30	25	32	27	23		29	24	21		25
10	48	36	28	24	45	34	27	23	30	24	21		26	22	19		23

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3155	3155	3155
5°	3160	3112	3133
10°	3135	3070	3091
15°	3088	3020	3025
20°	3026	2950	2958
25°	2964	2867	2880
30°	2887	2789	2781
35°	2813	2697	2676
40°	2722	2605	2576
45°	2632	2512	2474
50°	2533	2414	2356
55°	2430	2302	2247
60°	2313	2168	2123
65°	2186	2029	1976
70°	2023	1861	1818
75°	1798	1659	1674
80°	1528	1401	1396
85°	1105	957	934

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2632 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	406.8	2.1
10°-20°	1144.7	6.0
20°-30°	1682.2	8.8
30°-40°	1953.7	10.3
40°-50°	1951.3	10.2
50°-60°	1701.5	8.9
60°-70°	1257.8	6.6
70°-80°	711.6	3.7
80°-90°	196.0	1.0
90°-100°	177.9	0.9
100°-110°	565.2	3.0
110°-120°	967.2	5.1
120°-130°	1272.0	6.7
130°-140°	1427.7	7.5
140°-150°	1400.0	7.4
150°-160°	1174.4	6.2
160°-170°	778.9	4.1
170°-180°	272.2	1.4
0°-30°	3233.7	17.0
0°-40°	5187.4	27.2
0°-60°	8840.2	46.4
0°-90°	11005.6	57.8
90°-120°	1710.2	9.0
90°-150°	5809.9	30.5
90°-180°	8035.0	42.2
0°-180°	19041.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4115	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1714
35°	3213	3172	3105	3080	3059	2006
45°	2614	2585	2523	2477	2461	2018
55°	1979	1954	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	3	31	85	80	82	18
95°	126	151	155	155	151	141
105°	522	529	534	538	538	551
115°	971	984	980	978	971	960
125°	1412	1433	1426	1419	1416	1261
135°	1826	1853	1858	1855	1848	1411
145°	2217	2234	2248	2250	2241	1385
155°	2535	2542	2550	2562	2554	1167
165°	2757	2755	2755	2772	2760	778
175°	2869	2862	2857	2874	2860	273
180°	2874	2874	2874	2874	2874	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4322.4	4322.4	4322.4	4322.4	4322.4
2.5°	4347.5	4326.8	4280.9	4322.4	4314.4
5°	4322.4	4306.1	4260.2	4293.2	4285.4
7.5°	4293.2	4268.6	4222.8	4256.3	4247.9
10°	4247.9	4218.7	4168.9	4201.9	4189.6
12.5°	4185.3	4160.5	4110.8	4131.5	4123.1
15°	4114.7	4090.0	4035.7	4052.5	4031.8
17.5°	4027.3	4002.7	3948.5	3969.2	3948.5
20°	3931.7	3907.0	3848.8	3861.1	3844.9
22.5°	3836.5	3798.9	3744.7	3744.7	3736.3
25°	3724.0	3691.0	3620.4	3628.3	3620.4
27.5°	3599.2	3570.1	3516.3	3503.9	3483.2
30°	3474.8	3441.3	3379.1	3366.8	3350.0
32.5°	3341.6	3317.0	3250.4	3225.2	3208.4
35°	3212.9	3171.5	3104.8	3079.7	3059.0
37.5°	3067.4	3029.9	2963.3	2934.2	2913.5
40°	2917.9	2884.4	2817.8	2780.8	2764.0
42.5°	2772.4	2738.9	2672.7	2630.8	2606.2
45°	2614.5	2585.4	2522.7	2477.4	2460.6
47.5°	2460.6	2431.6	2364.9	2319.1	2294.3
50°	2298.4	2277.7	2219.4	2161.2	2140.5
52.5°	2140.5	2111.3	2057.6	2011.7	1982.6
55°	1978.6	1953.5	1903.7	1853.8	1833.1
57.5°	1816.3	1795.6	1741.4	1691.5	1674.8
60°	1654.1	1637.8	1579.5	1533.7	1521.4
62.5°	1496.2	1467.1	1425.6	1384.2	1367.5
65°	1334.3	1309.2	1267.8	1230.3	1209.6
67.5°	1168.1	1147.0	1109.9	1080.9	1064.1
70°	1014.2	997.4	960.0	930.9	914.5
72.5°	856.4	839.6	818.9	789.8	777.4
75°	698.0	690.1	668.9	644.3	652.7
77.5°	556.9	540.2	531.8	519.5	507.2
80°	415.9	411.4	403.0	390.7	382.3
82.5°	282.7	282.7	278.7	262.0	262.0
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.6	58.2	45.8	41.4
90°	2.6	31.2	84.9	79.7	82.3
92.5°	53.7	72.8	75.4	78.0	78.0
95°	126.5	150.8	155.1	155.1	150.8
97.5°	210.6	233.1	242.7	242.7	242.7
100°	307.6	327.6	334.5	334.5	331.9
102.5°	409.9	424.6	434.1	436.8	434.1
105°	521.7	528.6	533.8	538.2	538.2
107.5°	632.6	643.0	643.0	644.7	632.6
110°	740.0	754.0	754.0	754.0	747.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	856.2	870.9	868.3	861.4	856.2
115°	970.6	984.4	980.1	977.5	970.6
117.5°	1084.1	1103.2	1091.1	1084.1	1077.1
120°	1198.5	1217.5	1198.5	1198.5	1190.6
122.5°	1302.4	1326.8	1314.6	1307.7	1302.4
125°	1411.7	1433.3	1426.4	1418.6	1416.0
127.5°	1518.2	1545.1	1535.6	1525.2	1518.2
130°	1617.9	1649.1	1644.8	1639.5	1630.0
132.5°	1729.7	1753.9	1755.7	1743.5	1736.7
135°	1825.8	1852.7	1858.0	1855.3	1848.5
137.5°	1933.3	1955.0	1959.3	1957.6	1947.2
140°	2027.8	2049.4	2061.5	2061.5	2052.0
142.5°	2124.9	2146.5	2153.4	2156.1	2146.5
145°	2216.8	2234.0	2247.9	2250.5	2241.0
147.5°	2299.1	2320.7	2331.1	2335.4	2325.9
150°	2384.0	2398.7	2408.2	2416.0	2408.2
152.5°	2459.3	2474.1	2486.2	2495.8	2486.2
155°	2534.8	2541.6	2549.5	2561.6	2553.8
157.5°	2599.7	2604.9	2609.3	2626.6	2614.4
160°	2657.8	2663.0	2665.6	2680.3	2669.9
162.5°	2711.5	2711.5	2714.1	2730.6	2718.5
165°	2757.4	2754.8	2754.8	2772.2	2760.1
167.5°	2799.0	2791.3	2791.3	2808.5	2796.4
170°	2830.2	2823.3	2820.8	2838.0	2823.3
172.5°	2851.9	2845.0	2842.4	2859.7	2845.0
175°	2869.2	2862.3	2857.1	2874.5	2859.7
177.5°	2878.7	2871.9	2866.6	2881.3	2866.6
180°	2874.5	2874.5	2874.5	2874.5	2874.5

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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	11.96	12.90	12.85	13.80	14.96	11.52	12.46	12.41	13.36	14.52
	3H	13.63	14.47	14.53	15.39	16.57	13.14	13.98	14.04	14.90	16.08
	4H	14.22	15.02	15.14	15.94	17.13	13.73	14.53	14.65	15.45	16.64
	6H	14.63	15.36	15.55	16.29	17.49	14.14	14.87	15.06	15.80	17.00
	8H	14.74	15.43	15.67	16.38	17.58	14.24	14.94	15.18	15.89	17.09
	12H	14.79	15.45	15.73	16.39	17.62	14.29	14.95	15.23	15.89	17.12
4H	2H	12.43	13.23	13.35	14.15	15.34	12.08	12.87	13.00	13.80	14.99
	3H	14.31	14.97	15.24	15.92	17.13	13.90	14.57	14.83	15.52	16.73
	4H	15.03	15.63	15.97	16.58	17.81	14.61	15.21	15.55	16.16	17.39
	6H	15.55	16.07	16.50	17.04	18.27	15.12	15.65	16.08	16.62	17.85
	8H	15.70	16.19	16.66	17.16	18.40	15.27	15.76	16.23	16.73	17.97
	12H	15.78	16.22	16.76	17.20	18.45	15.34	15.78	16.32	16.76	18.01
8H	4H	15.23	15.72	16.19	16.68	17.93	14.86	15.35	15.81	16.31	17.56
	6H	15.87	16.27	16.85	17.28	18.52	15.49	15.89	16.47	16.90	18.14
	8H	16.09	16.45	17.08	17.44	18.70	15.71	16.06	16.70	17.06	18.32
	12H	16.23	16.54	17.22	17.53	18.84	15.83	16.14	16.82	17.13	18.44
12H	4H	15.22	15.66	16.19	16.64	17.89	14.86	15.30	15.83	16.28	17.53
	6H	15.90	16.26	16.89	17.25	18.51	15.53	15.89	16.52	16.89	18.15
	8H	16.15	16.46	17.14	17.45	18.76	15.77	16.09	16.77	17.08	18.38