

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: P909584

Luminaire Tested: DFN2DIP-SQ4F0-110D090US840-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909584
REPORT IS A COMBINATION OF REPORTS P900123 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D090US840-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

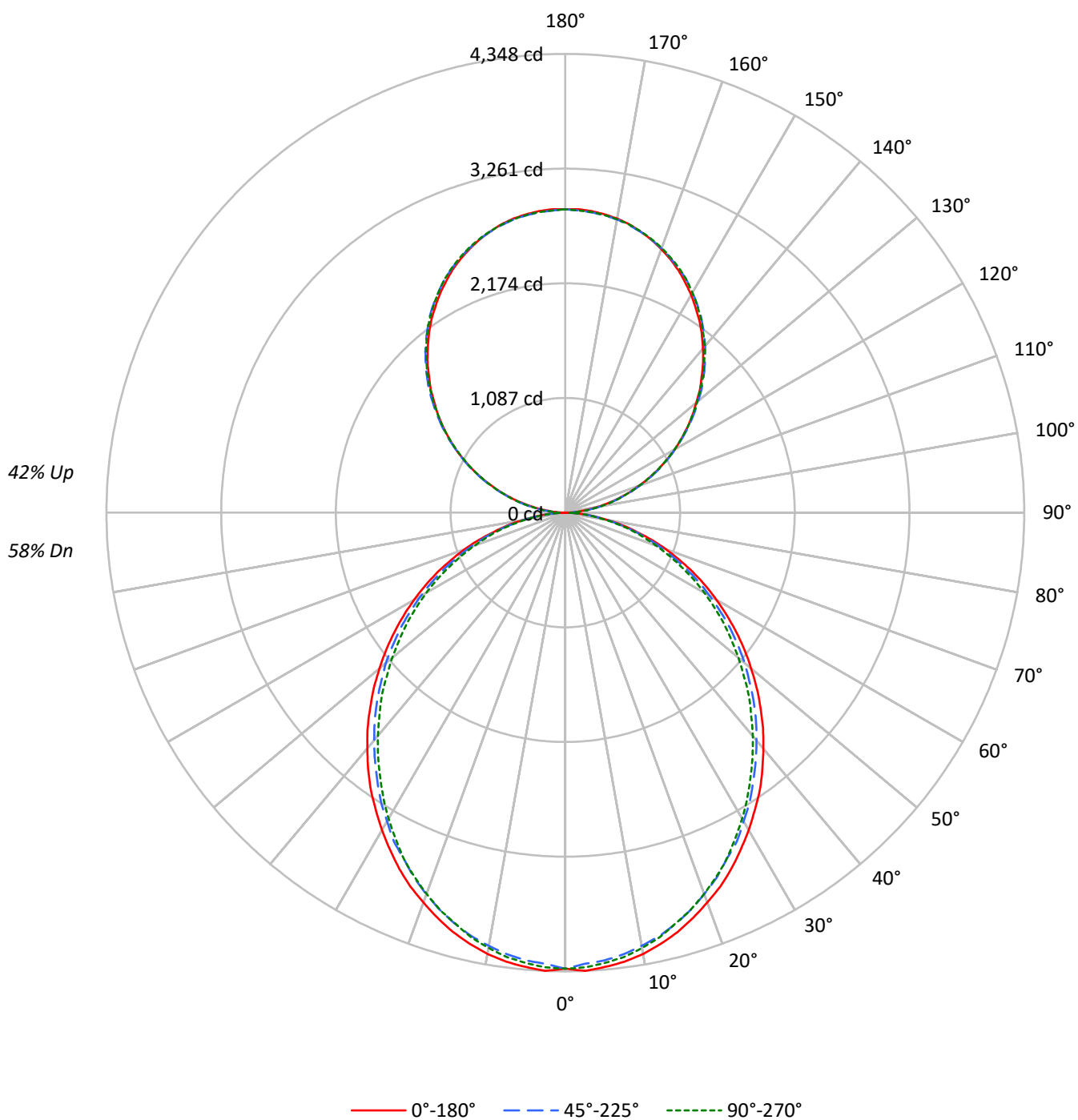
Lumens per Lamp: N/A
Luminaire Lumens: 19041.0 lumens
Efficiency: N/A
Efficacy: 110.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 171.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	30	10
RCR																	
0	109	109	109	109	102	102	102	102	88	88	88	75	75	75	63	63	63
1	100	95	91	88	93	89	85	82	77	74	72	66	64	62	56	55	53
2	91	83	77	72	84	78	72	68	67	63	60	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	44	41	38
4	76	65	57	51	70	61	53	48	53	47	43	46	41	38	39	36	33
5	70	58	49	43	65	54	47	41	47	42	37	41	36	33	35	32	29
6	64	52	44	38	60	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	29	25	23
8	55	43	35	29	51	40	33	28	35	30	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	29	24	21	25	21	18
10	48	36	28	24	45	34	27	23	30	24	21	26	22	19	23	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3033	3033	3033
5°	3038	2991	3012
10°	3013	2952	2972
15°	2969	2904	2909
20°	2909	2837	2845
25°	2849	2757	2770
30°	2774	2682	2675
35°	2704	2594	2574
40°	2617	2505	2479
45°	2530	2416	2381
50°	2435	2323	2268
55°	2335	2215	2164
60°	2223	2086	2045
65°	2100	1954	1904
70°	1944	1792	1753
75°	1728	1598	1616
80°	1468	1352	1349
85°	1061	925	907

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2530 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	11.83	12.76	12.72	13.67	14.83	11.38	12.32	12.27	13.23	14.38
	3H	13.50	14.34	14.40	15.26	16.44	13.01	13.85	13.91	14.77	15.95
	4H	14.09	14.89	15.01	15.81	17.00	13.60	14.39	14.51	15.32	16.51
	6H	14.50	15.23	15.43	16.16	17.36	14.00	14.73	14.93	15.66	16.86
	8H	14.61	15.31	15.54	16.25	17.45	14.11	14.80	15.04	15.75	16.95
	12H	14.66	15.33	15.60	16.27	17.49	14.15	14.82	15.09	15.76	16.98
4H	2H	12.30	13.09	13.22	14.02	15.21	11.94	12.74	12.86	13.66	14.85
	3H	14.18	14.84	15.11	15.79	17.00	13.77	14.43	14.70	15.39	16.59
	4H	14.90	15.50	15.84	16.45	17.68	14.47	15.08	15.41	16.03	17.26
	6H	15.42	15.94	16.37	16.92	18.14	14.99	15.51	15.94	16.48	17.71
	8H	15.57	16.06	16.53	17.03	18.27	15.14	15.63	16.09	16.59	17.84
	12H	15.65	16.09	16.63	17.08	18.33	15.20	15.64	16.18	16.63	17.88
8H	4H	15.10	15.59	16.06	16.55	17.80	14.72	15.21	15.68	16.18	17.42
	6H	15.74	16.14	16.72	17.15	18.39	15.36	15.76	16.34	16.77	18.01
	8H	15.96	16.32	16.96	17.32	18.58	15.57	15.93	16.56	16.92	18.18
	12H	16.10	16.42	17.10	17.41	18.71	15.69	16.01	16.69	17.00	18.30
12H	4H	15.09	15.53	16.07	16.51	17.76	14.72	15.16	15.70	16.15	17.39
	6H	15.77	16.13	16.76	17.12	18.38	15.40	15.76	16.39	16.75	18.01
	8H	16.02	16.33	17.01	17.32	18.63	15.64	15.95	16.63	16.94	18.25

END OF REPORT