

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: P909577

Luminaire Tested: DFN2DIP-SQ4F0-110D070US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909577
REPORT IS A COMBINATION OF REPORTS P901607 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D070US840-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

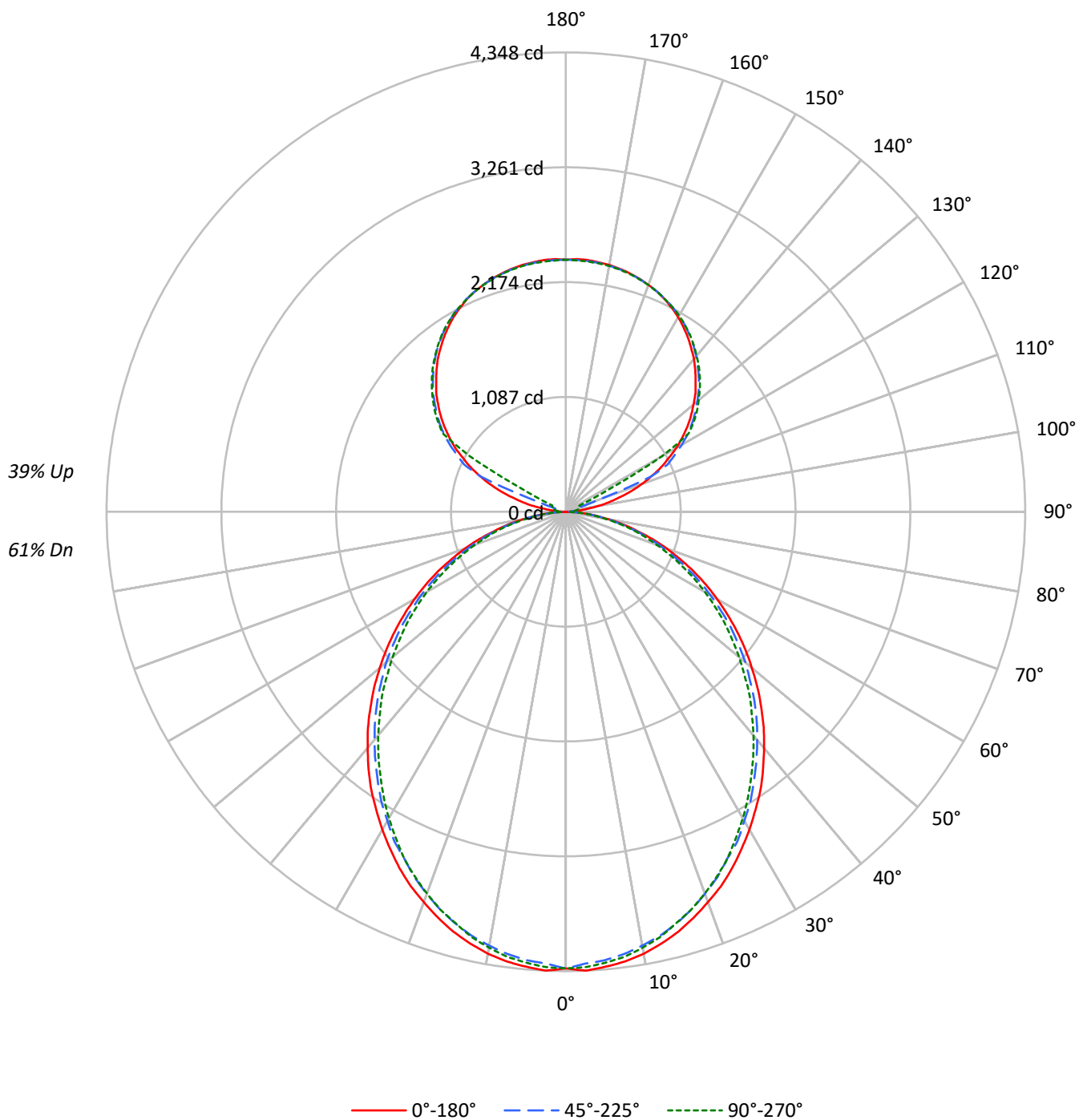
Lumens per Lamp: N/A
Luminaire Lumens: 17995.8 lumens
Efficiency: N/A
Efficacy: 114.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 157.3
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	110	110	110	110	103	103	103	103	90	90	90	77	77	77	66	66	66
1	100	96	92	88	94	90	86	83	79	76	74	68	66	65	59	57	56
2	91	84	77	72	85	79	73	68	69	65	61	60	57	54	52	49	47
3	83	74	66	60	78	69	63	57	61	56	51	53	49	46	46	43	40
4	76	65	57	51	71	61	54	49	54	48	44	47	43	39	41	38	35
5	70	58	50	44	65	55	47	42	48	42	38	42	38	34	37	33	30
6	65	52	44	38	60	49	42	36	44	38	33	38	34	30	34	30	27
7	60	47	39	33	56	45	37	32	40	34	29	35	30	26	31	27	24
8	56	43	35	30	52	41	33	28	36	30	26	32	27	24	28	24	21
9	52	39	32	27	48	37	30	25	33	27	23	30	25	21	26	22	19
10	48	36	29	24	45	34	28	23	31	25	21	27	23	19	24	20	18

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	2.3
10°-20°	1144.7	6.4
20°-30°	1682.2	9.3
30°-40°	1953.7	10.9
40°-50°	1951.3	10.8
50°-60°	1701.5	9.5
60°-70°	1257.8	7.0
70°-80°	711.6	4.0
80°-90°	192.0	1.1
90°-100°	78.7	0.4
100°-110°	293.3	1.6
110°-120°	777.8	4.3
120°-130°	1290.0	7.2
130°-140°	1370.3	7.6
140°-150°	1273.5	7.1
150°-160°	1023.9	5.7
160°-170°	659.7	3.7
170°-180°	227.1	1.3
0°-30°	3233.7	18.0
0°-40°	5187.4	28.8
0°-60°	8840.2	49.1
0°-90°	11001.6	61.1
90°-120°	1149.7	6.4
90°-150°	5083.5	28.2
90°-180°	6994.0	38.9
0°-180°	17995.8	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°	2	21	34	43	47	17
95°	112	55	67	76	74	133
105°	525	577	105	124	131	561
115°	993	1022	1065	266	142	977
125°	1403	1426	1459	1471	1476	1252
135°	1737	1764	1780	1797	1794	1342
145°	2015	2013	2042	2054	2046	1260
155°	2218	2203	2224	2234	2220	1022
165°	2337	2327	2332	2344	2332	660
175°	2391	2379	2382	2394	2377	228
180°	2386	2386	2386	2386	2386	

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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°	1.6	20.7	34.4	43.2	46.6
92.5°	43.2	36.3	41.4	44.9	46.6
95°	112.1	55.1	67.3	76.0	74.2
97.5°	201.9	60.5	88.0	93.3	94.9
100°	305.7	69.1	98.4	112.1	115.6
102.5°	419.4	416.2	101.9	120.8	126.0
105°	524.8	576.6	105.3	124.2	131.2
107.5°	647.3	690.4	108.9	127.7	134.7
110°	764.9	800.9	302.2	129.6	136.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	875.4	906.3	877.0	132.8	138.1
115°	992.6	1021.9	1065.1	265.9	141.7
117.5°	1094.5	1128.9	1158.4	911.4	459.2
120°	1208.4	1234.3	1265.5	1286.2	1053.1
122.5°	1304.9	1332.6	1367.4	1377.6	1379.4
125°	1403.4	1425.9	1458.8	1470.9	1475.9
127.5°	1493.2	1517.3	1543.4	1560.6	1562.3
130°	1577.8	1605.5	1624.4	1643.5	1641.8
132.5°	1664.2	1686.7	1705.6	1721.1	1719.5
135°	1736.7	1764.3	1779.8	1797.2	1793.7
137.5°	1812.5	1833.3	1850.7	1867.9	1862.8
140°	1886.7	1900.7	1919.6	1935.1	1926.5
142.5°	1949.0	1961.2	1983.5	1997.2	1988.6
145°	2014.7	2012.9	2042.2	2054.3	2045.7
147.5°	2071.4	2066.4	2095.7	2104.3	2097.5
150°	2126.8	2114.8	2142.4	2152.6	2144.0
152.5°	2173.3	2159.6	2185.5	2195.9	2183.8
155°	2218.3	2202.8	2223.5	2233.8	2220.1
157.5°	2254.5	2240.8	2256.3	2268.5	2254.5
160°	2285.7	2275.2	2285.7	2295.9	2283.8
162.5°	2313.2	2302.9	2311.5	2323.6	2308.0
165°	2337.3	2327.1	2332.2	2344.3	2332.2
167.5°	2356.4	2345.9	2351.3	2363.4	2347.8
170°	2372.0	2361.6	2365.0	2377.1	2361.6
172.5°	2382.3	2372.0	2375.5	2387.5	2372.0
175°	2390.9	2378.7	2382.3	2394.3	2377.1
177.5°	2394.3	2382.3	2384.1	2396.2	2380.6
180°	2385.7	2385.7	2385.7	2385.7	2385.7

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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	12.11	13.08	12.96	13.96	15.06	11.66	12.63	12.52	13.51	14.61
	3H	13.78	14.65	14.65	15.54	16.67	13.29	14.16	14.16	15.05	16.18
	4H	14.38	15.20	15.26	16.09	17.23	13.88	14.71	14.77	15.60	16.74
	6H	14.79	15.54	15.68	16.44	17.60	14.28	15.04	15.18	15.94	17.10
	8H	14.89	15.62	15.80	16.54	17.69	14.39	15.12	15.30	16.03	17.19
	12H	14.95	15.64	15.86	16.55	17.73	14.44	15.13	15.35	16.04	17.22
4H	2H	12.58	13.41	13.47	14.30	15.44	12.23	13.05	13.12	13.94	15.08
	3H	14.46	15.15	15.36	16.08	17.23	14.06	14.74	14.95	15.67	16.82
	4H	15.19	15.81	16.10	16.73	17.91	14.76	15.39	15.67	16.31	17.49
	6H	15.71	16.25	16.64	17.20	18.38	15.28	15.82	16.20	16.76	17.95
	8H	15.87	16.37	16.79	17.31	18.50	15.43	15.93	16.36	16.87	18.07
	12H	15.95	16.40	16.89	17.36	18.56	15.50	15.95	16.44	16.91	18.11
8H	4H	15.39	15.90	16.32	16.84	18.03	15.01	15.52	15.94	16.46	17.65
	6H	16.03	16.45	16.99	17.43	18.62	15.65	16.07	16.60	17.05	18.24
	8H	16.26	16.63	17.22	17.60	18.81	15.86	16.23	16.83	17.20	18.42
	12H	16.40	16.72	17.36	17.69	18.95	15.99	16.31	16.95	17.27	18.54
12H	4H	15.38	15.84	16.33	16.79	18.00	15.01	15.47	15.96	16.43	17.63
	6H	16.06	16.43	17.03	17.40	18.62	15.69	16.06	16.65	17.03	18.24
	8H	16.31	16.64	17.28	17.60	18.86	15.93	16.26	16.90	17.22	18.48