

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: P923297

Luminaire Tested: DFN2DIP-SQ4F0-140D090US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923297
REPORT IS A COMBINATION OF REPORTS P901647 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D090US940-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

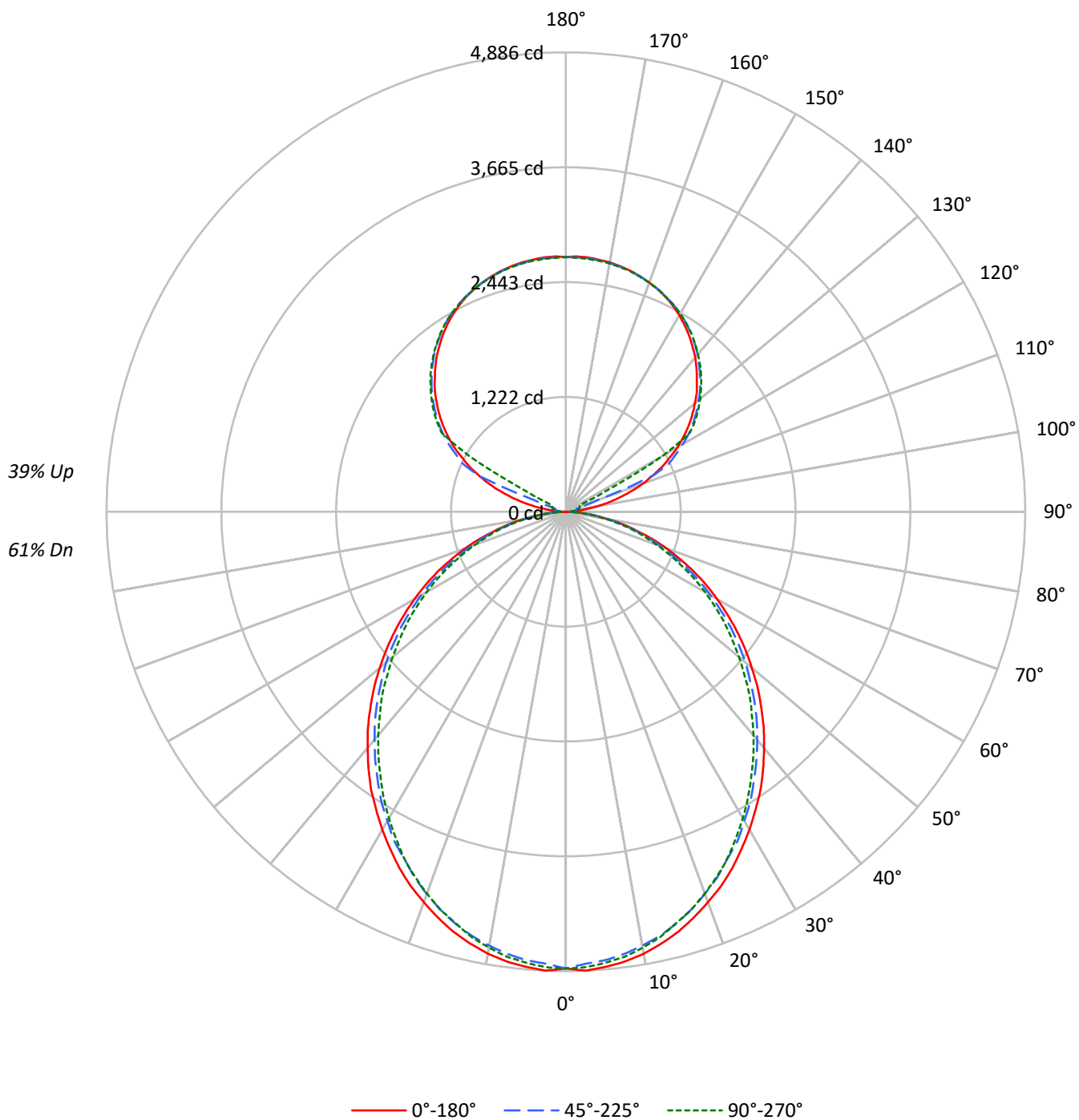
Lumens per Lamp: N/A
Luminaire Lumens: 20304.2 lumens
Efficiency: N/A
Efficacy: 96.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 210.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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	89	89	89	77	77	77	66	66	66
1	100	96	92	88	94	90	86	83	78	76	74	68	66	64	58	57	56
2	91	84	77	72	85	79	73	68	69	65	61	60	57	54	51	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	37	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	33	30	33	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	29	25	21	26	22	19
10	48	36	29	24	45	34	27	23	31	25	21	27	23	19	24	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3408	3408	3408
5°	3414	3362	3385
10°	3386	3317	3340
15°	3336	3263	3269
20°	3269	3188	3197
25°	3202	3098	3113
30°	3118	3014	3006
35°	3039	2915	2893
40°	2941	2815	2786
45°	2843	2715	2676
50°	2736	2610	2548
55°	2625	2489	2432
60°	2498	2344	2298
65°	2361	2196	2140
70°	2185	2014	1970
75°	1942	1796	1815
80°	1649	1519	1516
85°	1192	1039	1019

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2843 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	457.2	2.3
10°-20°	1286.4	6.3
20°-30°	1890.5	9.3
30°-40°	2195.7	10.8
40°-50°	2192.9	10.8
50°-60°	1912.2	9.4
60°-70°	1413.5	7.0
70°-80°	799.7	3.9
80°-90°	215.8	1.1
90°-100°	89.3	0.4
100°-110°	332.9	1.6
110°-120°	883.0	4.3
120°-130°	1464.5	7.2
130°-140°	1555.6	7.7
140°-150°	1445.8	7.1
150°-160°	1162.4	5.7
160°-170°	749.0	3.7
170°-180°	257.8	1.3
0°-30°	3634.0	17.9
0°-40°	5829.7	28.7
0°-60°	9934.8	48.9
0°-90°	12363.9	60.9
90°-120°	1305.2	6.4
90°-150°	5771.2	28.4
90°-180°	7940.0	39.1
0°-180°	20304.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4858	4858	4858	4858	4858	
5°	4858	4839	4788	4825	4816	461
15°	4624	4596	4535	4554	4531	1302
25°	4185	4148	4069	4078	4069	1926
35°	3611	3564	3489	3461	3438	2255
45°	2938	2906	2835	2784	2765	2268
55°	2224	2195	2139	2083	2060	1988
65°	1500	1471	1425	1383	1359	1483
75°	784	776	752	724	733	837
85°	191	187	182	168	164	213
90°	2	24	39	49	53	19
95°	127	63	76	86	84	151
105°	596	655	120	141	149	637
115°	1127	1160	1209	302	161	1109
125°	1593	1619	1656	1670	1676	1421
135°	1972	2003	2020	2040	2036	1523
145°	2287	2285	2318	2332	2322	1431
155°	2518	2501	2524	2536	2520	1161
165°	2654	2642	2648	2662	2648	750
175°	2714	2700	2705	2718	2699	258
180°	2708	2708	2708	2708	2708	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4857.6	4857.6	4857.6	4857.6	4857.6
2.5°	4885.8	4862.5	4811.0	4857.6	4848.7
5°	4857.6	4839.2	4787.7	4824.9	4815.9
7.5°	4824.9	4797.1	4745.6	4783.2	4773.8
10°	4773.8	4741.1	4685.1	4722.3	4708.4
12.5°	4703.4	4675.7	4619.7	4643.0	4633.6
15°	4624.1	4596.4	4535.4	4554.3	4531.0
17.5°	4526.1	4498.3	4437.3	4460.6	4437.3
20°	4418.5	4390.8	4325.3	4339.2	4320.9
22.5°	4311.4	4269.3	4208.3	4208.3	4199.0
25°	4185.1	4147.9	4068.6	4077.5	4068.6
27.5°	4044.8	4012.2	3951.7	3937.8	3914.5
30°	3905.1	3867.4	3797.5	3783.7	3764.8
32.5°	3755.4	3727.7	3652.8	3624.6	3605.7
35°	3610.7	3564.2	3489.3	3461.1	3437.7
37.5°	3447.2	3405.1	3330.2	3297.5	3274.2
40°	3279.2	3241.5	3166.6	3125.1	3106.2
42.5°	3115.6	3078.0	3003.6	2956.6	2928.8
45°	2938.2	2905.5	2835.2	2784.1	2765.3
47.5°	2765.3	2732.6	2657.7	2606.2	2578.5
50°	2582.9	2559.7	2494.2	2428.8	2405.5
52.5°	2405.5	2372.8	2312.3	2260.8	2228.1
55°	2223.7	2195.4	2139.4	2083.4	2060.1
57.5°	2041.2	2017.9	1957.0	1901.0	1882.1
60°	1858.9	1840.6	1775.1	1723.6	1709.7
62.5°	1681.5	1648.8	1602.1	1555.6	1536.8
65°	1499.6	1471.3	1424.8	1382.6	1359.3
67.5°	1312.8	1289.0	1247.3	1214.6	1195.8
70°	1139.8	1121.0	1078.9	1046.2	1027.8
72.5°	962.4	943.5	920.2	887.6	873.7
75°	784.5	775.6	751.8	724.1	733.4
77.5°	625.9	607.1	597.6	583.8	569.9
80°	467.3	462.4	453.0	439.1	429.6
82.5°	317.6	317.6	313.2	294.4	294.4
85°	191.3	186.8	182.4	168.0	163.5
87.5°	84.3	74.8	65.5	51.5	46.5
90°	1.9	23.5	39.1	49.1	52.8
92.5°	49.1	41.2	47.0	51.0	52.8
95°	127.3	62.6	76.3	86.3	84.3
97.5°	229.3	68.7	99.9	105.8	107.7
100°	347.0	78.5	111.7	127.3	131.3
102.5°	476.2	472.4	115.7	137.1	143.1
105°	595.8	654.7	119.6	141.1	148.9
107.5°	734.9	783.8	123.6	145.0	152.9
110°	868.3	909.3	343.0	147.0	154.8

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	993.7	1028.9	995.6	150.8	156.9
115°	1126.9	1160.1	1209.2	301.8	160.8
117.5°	1242.5	1281.7	1315.1	1034.7	521.3
120°	1371.9	1401.2	1436.6	1460.1	1195.5
122.5°	1481.6	1513.0	1552.3	1563.9	1566.0
125°	1593.2	1618.8	1656.1	1669.8	1675.6
127.5°	1695.1	1722.6	1752.2	1771.7	1773.6
130°	1791.3	1822.7	1844.1	1865.7	1863.9
132.5°	1889.3	1914.9	1936.3	1954.0	1952.1
135°	1971.7	2003.0	2020.5	2040.3	2036.4
137.5°	2057.8	2081.3	2101.0	2120.6	2114.8
140°	2142.0	2157.8	2179.3	2196.9	2187.2
142.5°	2212.8	2226.5	2251.8	2267.4	2257.7
145°	2287.2	2285.1	2318.4	2332.2	2322.4
147.5°	2351.7	2345.9	2379.2	2389.0	2381.2
150°	2414.6	2400.8	2432.2	2443.8	2434.1
152.5°	2467.4	2451.8	2481.1	2493.0	2479.2
155°	2518.4	2500.9	2524.3	2536.0	2520.4
157.5°	2559.6	2544.0	2561.6	2575.3	2559.6
160°	2594.9	2583.0	2594.9	2606.6	2592.8
162.5°	2626.1	2614.4	2624.2	2637.9	2620.3
165°	2653.6	2641.9	2647.8	2661.5	2647.8
167.5°	2675.2	2663.4	2669.3	2683.1	2665.4
170°	2692.9	2681.0	2684.9	2698.7	2681.0
172.5°	2704.6	2692.9	2696.8	2710.5	2692.9
175°	2714.3	2700.5	2704.6	2718.2	2698.7
177.5°	2718.2	2704.6	2706.6	2720.3	2702.7
180°	2708.5	2708.5	2708.5	2708.5	2708.5

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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	12.49	13.46	13.35	14.34	15.45	12.05	13.02	12.91	13.90	15.00
	3H	14.17	15.04	15.04	15.92	17.06	13.68	14.55	14.55	15.43	16.57
	4H	14.76	15.58	15.65	16.48	17.62	14.27	15.09	15.15	15.98	17.13
	6H	15.17	15.93	16.07	16.83	17.99	14.67	15.43	15.57	16.33	17.49
	8H	15.28	16.00	16.19	16.92	18.08	14.78	15.50	15.68	16.42	17.58
	12H	15.33	16.02	16.25	16.93	18.12	14.82	15.51	15.74	16.42	17.61
4H	2H	12.97	13.79	13.86	14.68	15.83	12.61	13.43	13.50	14.33	15.47
	3H	14.85	15.53	15.75	16.46	17.62	14.44	15.13	15.34	16.05	17.21
	4H	15.57	16.20	16.48	17.12	18.30	15.15	15.77	16.06	16.69	17.88
	6H	16.10	16.64	17.02	17.58	18.77	15.66	16.20	16.59	17.15	18.33
	8H	16.25	16.76	17.18	17.70	18.89	15.81	16.32	16.74	17.26	18.46
	12H	16.33	16.79	17.28	17.74	18.95	15.88	16.34	16.83	17.29	18.50
8H	4H	15.78	16.28	16.71	17.22	18.42	15.40	15.90	16.33	16.84	18.04
	6H	16.42	16.83	17.37	17.82	19.01	16.03	16.45	16.99	17.43	18.63
	8H	16.64	17.01	17.61	17.98	19.20	16.25	16.62	17.21	17.59	18.81
	12H	16.78	17.11	17.75	18.07	19.34	16.37	16.70	17.34	17.66	18.92
12H	4H	15.77	16.22	16.72	17.18	18.38	15.40	15.85	16.35	16.81	18.02
	6H	16.45	16.82	17.41	17.79	19.01	16.08	16.45	17.04	17.42	18.63
	8H	16.70	17.02	17.67	17.99	19.25	16.32	16.64	17.29	17.61	18.87