

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: P923309

Luminaire Tested: DFN2DIP-SQ4F0-140D120US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923309
REPORT IS A COMBINATION OF REPORTS P901701 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D120US940-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

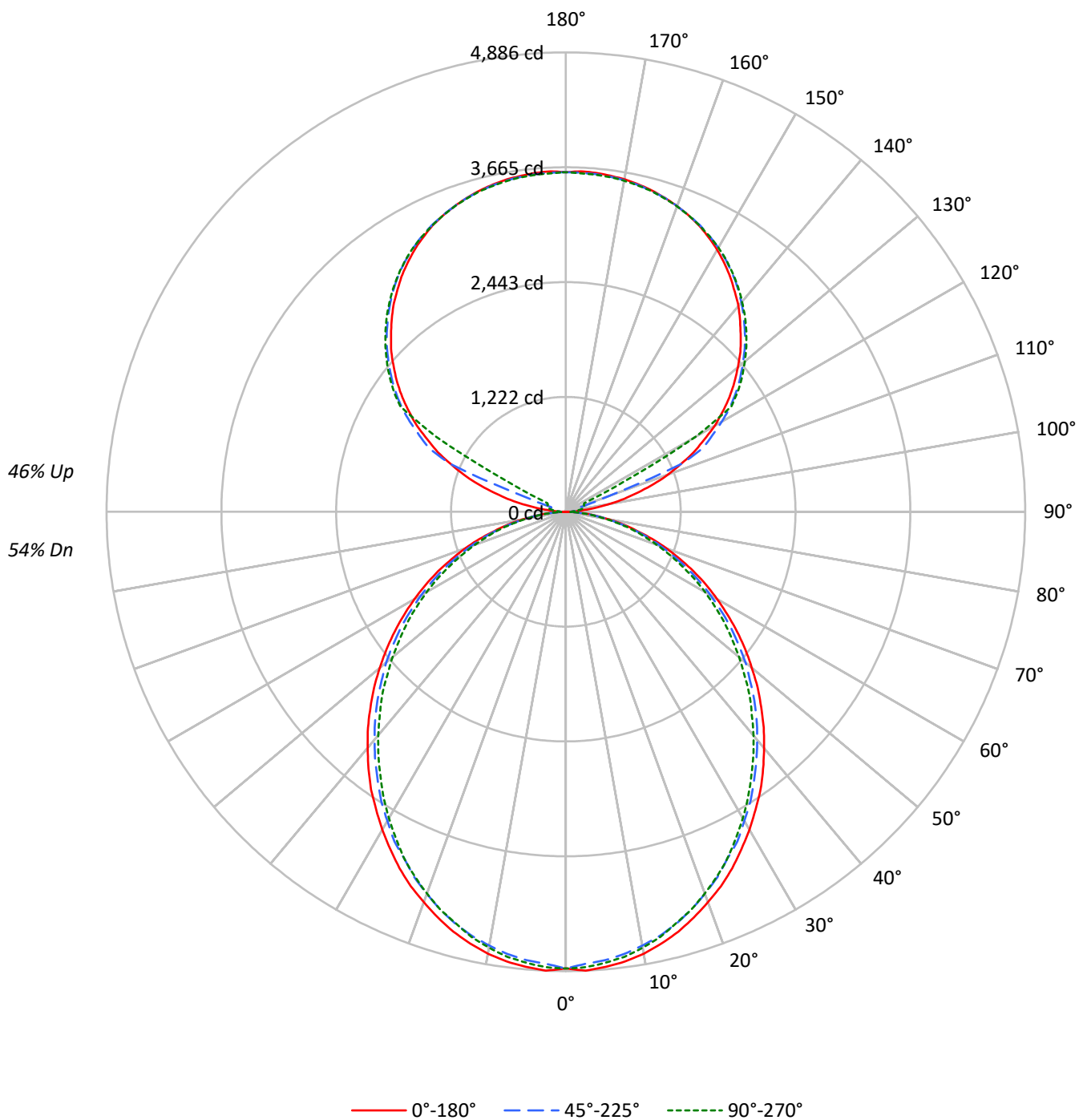
Lumens per Lamp: N/A
Luminaire Lumens: 22952.6 lumens
Efficiency: N/A
Efficacy: 98.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 233.9
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	108	108	108	108		100	100	100	100		85	85	85		72	72	72		60	60	60
1	99	94	90	87		91	88	84	81		75	73	70		63	62	60		53	52	50
2	90	82	76	71		83	77	71	67		66	62	58		56	53	50		46	44	42
3	82	72	65	59		76	67	61	56		58	53	49		49	46	42		41	38	36
4	75	64	56	50		69	60	53	47		52	46	42		44	40	36		37	34	31
5	69	57	49	43		64	53	46	41		46	40	36		39	35	32		33	30	27
6	63	51	43	37		59	48	41	35		42	36	31		36	31	28		30	27	24
7	59	46	38	33		54	43	36	31		38	32	28		32	28	24		27	24	21
8	54	42	34	29		50	39	32	28		34	29	25		30	25	22		25	22	19
9	51	38	31	26		47	36	29	25		32	26	22		27	23	20		23	20	17
10	47	35	28	23		44	33	27	22		29	24	20		25	21	18		22	18	16

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	2.0
10°-20°	1286.4	5.6
20°-30°	1890.5	8.2
30°-40°	2195.7	9.6
40°-50°	2192.9	9.6
50°-60°	1912.2	8.3
60°-70°	1413.5	6.2
70°-80°	799.7	3.5
80°-90°	217.4	0.9
90°-100°	119.1	0.5
100°-110°	443.9	1.9
110°-120°	1177.3	5.1
120°-130°	1952.7	8.5
130°-140°	2074.2	9.0
140°-150°	1927.7	8.4
150°-160°	1549.8	6.8
160°-170°	998.7	4.4
170°-180°	343.7	1.5
0°-30°	3634.0	15.8
0°-40°	5829.7	25.4
0°-60°	9934.8	43.3
0°-90°	12365.5	53.9
90°-120°	1740.3	7.6
90°-150°	7694.9	33.5
90°-180°	10587.0	46.1
0°-180°	22952.6	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	31	52	66	70	21
95°	170	84	102	115	112	201
105°	794	873	160	188	199	849
115°	1502	1547	1612	402	214	1479
125°	2124	2158	2208	2226	2234	1895
135°	2629	2671	2694	2720	2715	2031
145°	3050	3047	3091	3110	3096	1907
155°	3358	3334	3366	3381	3361	1547
165°	3538	3522	3530	3549	3530	1000
175°	3619	3601	3606	3624	3598	344
180°	3611	3611	3611	3611	3611	

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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°	2.5	31.3	52.2	65.5	70.4
92.5°	65.5	54.9	62.7	67.9	70.4
95°	169.7	83.5	101.7	115.1	112.4
97.5°	305.7	91.6	133.1	141.2	143.7
100°	462.6	104.6	148.9	169.7	175.0
102.5°	634.9	629.9	154.2	182.8	190.8
105°	794.3	872.9	159.5	188.1	198.6
107.5°	979.9	1045.1	164.8	193.3	203.8
110°	1157.7	1212.4	457.4	196.1	206.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1325.0	1371.8	1327.5	201.1	209.1
115°	1502.4	1546.8	1612.3	402.4	214.5
117.5°	1656.7	1708.9	1753.5	1379.6	695.1
120°	1829.3	1868.3	1915.5	1946.9	1594.0
122.5°	1975.4	2017.3	2069.7	2085.3	2088.0
125°	2124.3	2158.5	2208.1	2226.4	2234.2
127.5°	2260.2	2296.9	2336.3	2362.3	2364.8
130°	2388.4	2430.3	2458.8	2487.7	2485.2
132.5°	2519.0	2553.1	2581.7	2605.3	2602.8
135°	2628.9	2670.8	2694.0	2720.4	2715.2
137.5°	2743.7	2775.0	2801.4	2827.4	2819.7
140°	2856.1	2877.1	2905.6	2929.3	2916.2
142.5°	2950.3	2968.7	3002.5	3023.3	3010.2
145°	3049.6	3046.9	3091.2	3109.6	3096.5
147.5°	3135.6	3127.9	3172.3	3185.3	3175.0
150°	3219.3	3201.1	3243.0	3258.5	3245.5
152.5°	3289.8	3269.0	3308.2	3323.9	3305.7
155°	3357.7	3334.5	3365.8	3381.4	3360.6
157.5°	3412.7	3391.9	3415.5	3433.8	3412.7
160°	3459.8	3444.1	3459.8	3475.4	3457.1
162.5°	3501.5	3486.0	3499.0	3517.3	3493.7
165°	3538.0	3522.5	3530.3	3548.7	3530.3
167.5°	3566.9	3551.1	3559.2	3577.5	3553.9
170°	3590.5	3574.7	3579.9	3598.2	3574.7
172.5°	3606.0	3590.5	3595.8	3614.1	3590.5
175°	3619.0	3600.7	3606.0	3624.4	3598.2
177.5°	3624.4	3606.0	3608.8	3627.1	3603.6
180°	3611.3	3611.3	3611.3	3611.3	3611.3

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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	11.90	12.79	12.82	13.73	14.95	11.45	12.35	12.37	13.29	14.50
	3H	13.56	14.37	14.50	15.32	16.56	13.07	13.88	14.01	14.83	16.07
	4H	14.16	14.92	15.10	15.87	17.12	13.66	14.42	14.61	15.38	16.63
	6H	14.56	15.26	15.52	16.22	17.48	14.06	14.76	15.02	15.72	16.98
	8H	14.67	15.34	15.64	16.31	17.57	14.17	14.83	15.13	15.81	17.07
	12H	14.72	15.36	15.69	16.33	17.61	14.21	14.85	15.18	15.82	17.10
4H	2H	12.36	13.12	13.32	14.08	15.33	12.01	12.77	12.96	13.72	14.97
	3H	14.24	14.87	15.20	15.86	17.12	13.83	14.46	14.79	15.45	16.71
	4H	14.95	15.54	15.93	16.51	17.80	14.53	15.11	15.51	16.09	17.38
	6H	15.48	15.98	16.46	16.98	18.26	15.04	15.54	16.03	16.55	17.83
	8H	15.63	16.10	16.62	17.09	18.39	15.19	15.66	16.18	16.66	17.95
	12H	15.71	16.13	16.71	17.14	18.44	15.26	15.68	16.26	16.69	18.00
8H	4H	15.15	15.62	16.14	16.62	17.92	14.78	15.25	15.77	16.24	17.54
	6H	15.79	16.18	16.81	17.22	18.51	15.41	15.80	16.42	16.83	18.13
	8H	16.02	16.36	17.04	17.38	18.70	15.62	15.97	16.65	16.99	18.31
	12H	16.15	16.45	17.18	17.47	18.83	15.74	16.04	16.77	17.06	18.42
12H	4H	15.14	15.56	16.15	16.58	17.88	14.77	15.20	15.78	16.21	17.51
	6H	15.82	16.16	16.84	17.19	18.50	15.45	15.79	16.47	16.82	18.13
	8H	16.07	16.37	17.10	17.39	18.75	15.69	15.99	16.72	17.01	18.37