

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: P923245

Luminaire Tested: DFN2DIP-SQ4F0-110D160US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923245
REPORT IS A COMBINATION OF REPORTS P901733 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US940-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

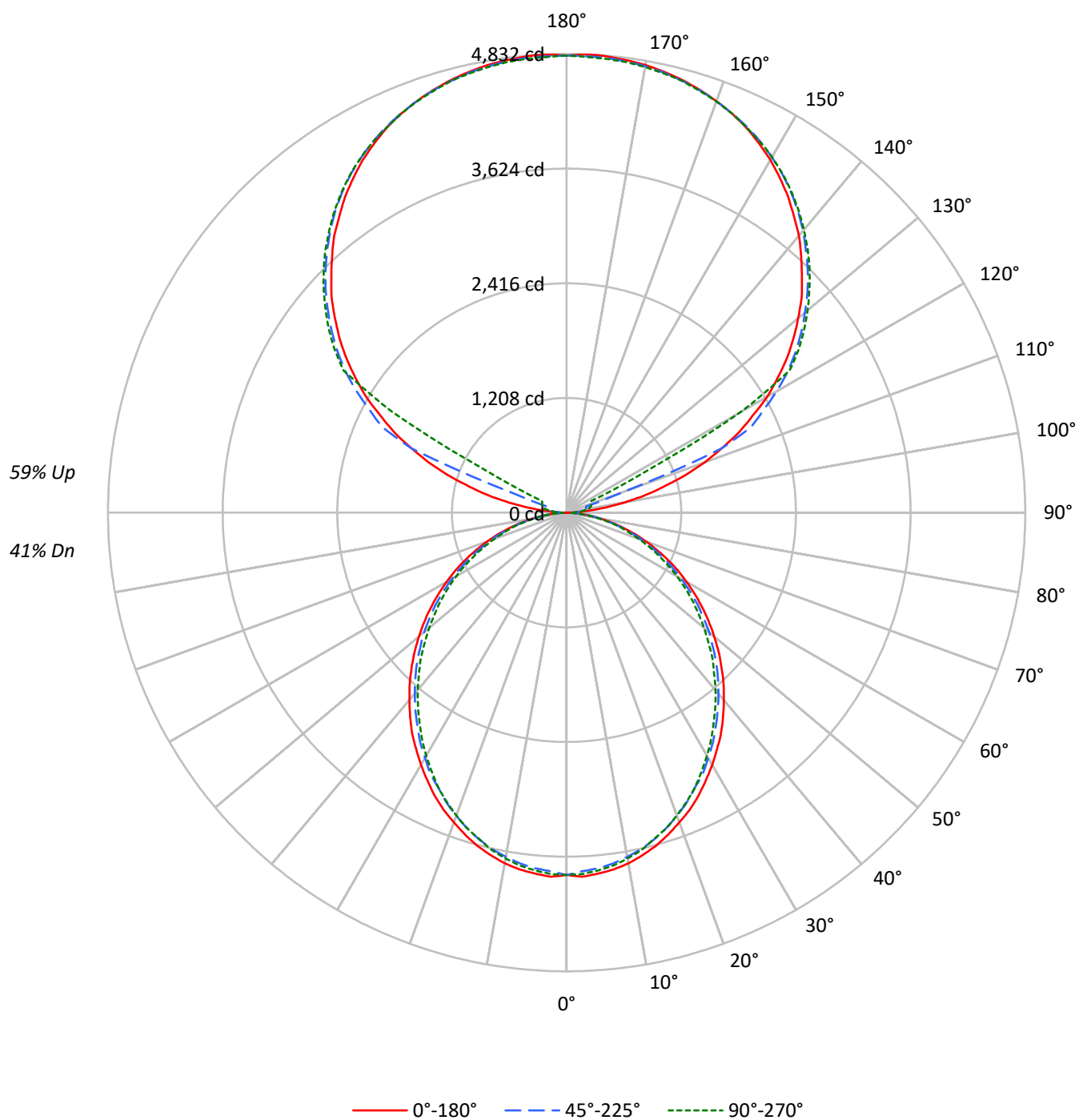
Lumens per Lamp: N/A
Luminaire Lumens: 23835.5 lumens
Efficiency: N/A
Efficacy: 104.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 227.2
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	105	105	105	105	96	96	96	96	78	78	78	62	62	62	48	48	48
1	96	91	88	84	87	83	80	77	69	66	64	55	53	52	42	41	40
2	87	80	74	69	79	73	68	63	60	56	53	48	46	43	37	35	34
3	79	70	63	57	72	64	58	53	53	48	45	42	39	37	33	31	29
4	73	62	54	48	66	57	50	45	47	42	38	38	34	31	29	27	25
5	67	55	47	41	60	51	44	38	42	37	33	34	30	27	26	24	22
6	61	49	41	36	56	45	38	33	38	32	28	31	27	24	24	21	19
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17
8	53	40	33	28	48	37	30	26	31	26	22	25	22	19	20	17	15
9	49	37	29	25	45	34	27	23	29	23	20	23	20	17	19	16	14
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2678	2678	2678
5°	2682	2641	2659
10°	2661	2606	2624
15°	2621	2564	2569
20°	2568	2505	2512
25°	2516	2434	2446
30°	2450	2368	2362
35°	2387	2291	2273
40°	2311	2212	2189
45°	2234	2133	2102
50°	2150	2051	2002
55°	2062	1956	1910
60°	1963	1842	1805
65°	1855	1725	1681
70°	1717	1582	1548
75°	1526	1411	1426
80°	1296	1194	1192
85°	937	817	801

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2581 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	359.2	1.5
10°-20°	1010.7	4.2
20°-30°	1485.4	6.2
30°-40°	1725.2	7.2
40°-50°	1723.0	7.2
50°-60°	1502.4	6.3
60°-70°	1110.6	4.7
70°-80°	628.4	2.6
80°-90°	174.3	0.7
90°-100°	158.8	0.7
100°-110°	591.9	2.5
110°-120°	1569.8	6.6
120°-130°	2603.6	10.9
130°-140°	2765.6	11.6
140°-150°	2570.3	10.8
150°-160°	2066.5	8.7
160°-170°	1331.6	5.6
170°-180°	458.3	1.9
0°-30°	2855.3	12.0
0°-40°	4580.5	19.2
0°-60°	7805.9	32.7
0°-90°	9719.2	40.8
90°-120°	2320.4	9.7
90°-150°	10259.9	43.0
90°-180°	14116.0	59.2
0°-180°	23835.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3817	3817	3817	3817	3817	
5°	3817	3802	3762	3791	3784	362
15°	3633	3611	3564	3578	3560	1023
25°	3288	3259	3197	3204	3197	1513
35°	2837	2800	2742	2719	2701	1772
45°	2309	2283	2228	2188	2173	1782
55°	1747	1725	1681	1637	1619	1562
65°	1178	1156	1120	1086	1068	1165
75°	616	609	591	569	576	658
85°	150	147	143	132	128	168
90°	3	42	70	87	94	22
95°	226	111	136	154	150	268
105°	1059	1164	213	251	265	1132
115°	2003	2062	2150	537	286	1972
125°	2832	2878	2944	2969	2979	2526
135°	3505	3561	3592	3627	3620	2708
145°	4066	4062	4122	4146	4129	2543
155°	4477	4446	4488	4508	4481	2063
165°	4717	4697	4707	4732	4707	1333
175°	4825	4801	4808	4832	4798	459
180°	4815	4815	4815	4815	4815	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3816.7	3816.7	3816.7	3816.7	3816.7
2.5°	3838.8	3820.5	3780.0	3816.7	3809.7
5°	3816.7	3802.3	3761.8	3790.9	3784.0
7.5°	3790.9	3769.2	3728.7	3758.3	3750.9
10°	3750.9	3725.1	3681.2	3710.3	3699.4
12.5°	3695.6	3673.8	3629.8	3648.1	3640.7
15°	3633.3	3611.4	3563.5	3578.3	3560.1
17.5°	3556.1	3534.4	3486.5	3504.8	3486.5
20°	3471.7	3449.8	3398.5	3409.4	3395.0
22.5°	3387.6	3354.4	3306.6	3306.6	3299.1
25°	3288.3	3259.1	3196.8	3203.8	3196.8
27.5°	3178.1	3152.4	3104.8	3094.0	3075.7
30°	3068.3	3038.7	2983.8	2972.9	2958.1
32.5°	2950.7	2928.9	2870.1	2847.9	2833.1
35°	2837.0	2800.4	2741.6	2719.4	2701.1
37.5°	2708.5	2675.4	2616.6	2590.9	2572.6
40°	2576.5	2546.9	2488.1	2455.4	2440.6
42.5°	2448.0	2418.4	2360.0	2323.0	2301.2
45°	2308.6	2282.9	2227.6	2187.5	2172.7
47.5°	2172.7	2147.1	2088.2	2047.7	2025.9
50°	2029.4	2011.2	1959.7	1908.3	1890.1
52.5°	1890.1	1864.3	1816.9	1776.3	1750.6
55°	1747.1	1724.9	1681.0	1636.9	1618.6
57.5°	1603.8	1585.6	1537.7	1493.6	1478.8
60°	1460.5	1446.2	1394.7	1354.2	1343.4
62.5°	1321.2	1295.5	1258.8	1222.3	1207.5
65°	1178.2	1156.0	1119.5	1086.4	1068.1
67.5°	1031.4	1012.8	980.1	954.4	939.6
70°	895.5	880.7	847.7	822.0	807.5
72.5°	756.2	741.4	723.1	697.4	686.4
75°	616.4	609.4	590.7	568.9	576.3
77.5°	491.8	477.0	469.6	458.7	447.8
80°	367.2	363.3	355.9	345.0	337.6
82.5°	249.6	249.6	246.1	231.3	231.3
85°	150.3	146.8	143.3	132.0	128.5
87.5°	66.2	58.8	51.4	40.5	36.6
90°	3.3	41.8	69.5	87.3	93.9
92.5°	87.3	73.2	83.6	90.6	93.9
95°	226.3	111.3	135.7	153.5	149.8
97.5°	407.5	122.1	177.5	188.2	191.5
100°	616.9	139.5	198.6	226.3	233.4
102.5°	846.5	839.9	205.6	243.7	254.4
105°	1059.2	1163.9	212.7	250.7	264.7
107.5°	1306.5	1393.5	219.7	257.8	271.8
110°	1543.6	1616.5	609.8	261.4	275.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1766.7	1829.2	1770.0	268.1	278.8
115°	2003.3	2062.4	2149.7	536.6	285.9
117.5°	2208.9	2278.4	2338.1	1839.5	926.8
120°	2439.0	2491.1	2553.9	2595.8	2125.4
122.5°	2633.8	2689.7	2759.6	2780.3	2784.0
125°	2832.4	2877.9	2944.2	2968.6	2978.9
127.5°	3013.6	3062.5	3115.0	3149.8	3153.1
130°	3184.6	3240.4	3278.5	3316.9	3313.6
132.5°	3358.7	3404.2	3442.3	3473.7	3470.4
135°	3505.1	3561.0	3592.1	3627.2	3620.2
137.5°	3658.2	3700.1	3735.2	3770.0	3759.6
140°	3808.0	3836.1	3874.2	3905.7	3888.3
142.5°	3933.8	3958.2	4003.3	4031.1	4013.7
145°	4066.2	4062.5	4121.7	4146.0	4128.7
147.5°	4180.8	4170.4	4229.6	4247.0	4233.3
150°	4292.5	4268.1	4324.0	4344.7	4327.3
152.5°	4386.4	4358.7	4410.8	4432.0	4407.5
155°	4477.0	4446.0	4487.8	4508.5	4480.8
157.5°	4550.3	4522.6	4554.0	4578.4	4550.3
160°	4613.2	4592.0	4613.2	4633.9	4609.4
162.5°	4668.6	4648.0	4665.3	4689.7	4658.3
165°	4717.4	4696.7	4707.1	4731.5	4707.1
167.5°	4755.9	4734.8	4745.6	4769.9	4738.5
170°	4787.3	4766.3	4773.2	4797.7	4766.3
172.5°	4808.0	4787.3	4794.4	4818.8	4787.3
175°	4825.4	4801.0	4808.0	4832.4	4797.7
177.5°	4832.4	4808.0	4811.8	4836.2	4804.7
180°	4815.1	4815.1	4815.1	4815.1	4815.1

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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	9.79	10.57	10.82	11.61	13.01	9.35	10.13	10.38	11.17	12.57
	3H	11.45	12.15	12.49	13.20	14.62	10.96	11.66	12.00	12.71	14.13
	4H	12.04	12.70	13.09	13.75	15.18	11.54	12.21	12.60	13.26	14.68
	6H	12.44	13.05	13.50	14.10	15.54	11.93	12.55	13.00	13.60	15.04
	8H	12.54	13.12	13.61	14.19	15.62	12.04	12.62	13.11	13.69	15.12
	12H	12.59	13.14	13.66	14.21	15.66	12.08	12.63	13.15	13.70	15.15
4H	2H	10.24	10.91	11.30	11.96	13.38	9.89	10.55	10.95	11.60	13.03
	3H	12.11	12.66	13.17	13.74	15.18	11.70	12.25	12.77	13.33	14.77
	4H	12.82	13.33	13.89	14.40	15.86	12.40	12.91	13.47	13.97	15.43
	6H	13.33	13.77	14.42	14.87	16.32	12.90	13.34	13.99	14.43	15.88
	8H	13.49	13.89	14.57	14.98	16.45	13.05	13.46	14.13	14.54	16.01
	12H	13.56	13.93	14.66	15.02	16.50	13.11	13.48	14.21	14.58	16.05
8H	4H	13.01	13.42	14.09	14.50	15.97	12.63	13.04	13.72	14.13	15.60
	6H	13.64	13.98	14.75	15.11	16.57	13.26	13.60	14.37	14.72	16.19
	8H	13.87	14.16	14.98	15.27	16.76	13.47	13.77	14.59	14.88	16.36
	12H	14.00	14.26	15.11	15.36	16.89	13.59	13.85	14.70	14.95	16.47
12H	4H	12.99	13.36	14.09	14.46	15.93	12.62	12.99	13.73	14.09	15.57
	6H	13.67	13.97	14.79	15.08	16.56	13.30	13.60	14.41	14.71	16.19
	8H	13.91	14.18	15.03	15.28	16.80	13.53	13.80	14.65	14.90	16.42