

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: P920553

Luminaire Tested: DFN2DIP-SQ4F0-120D160US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920553
REPORT IS A COMBINATION OF REPORTS P901735 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D160US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

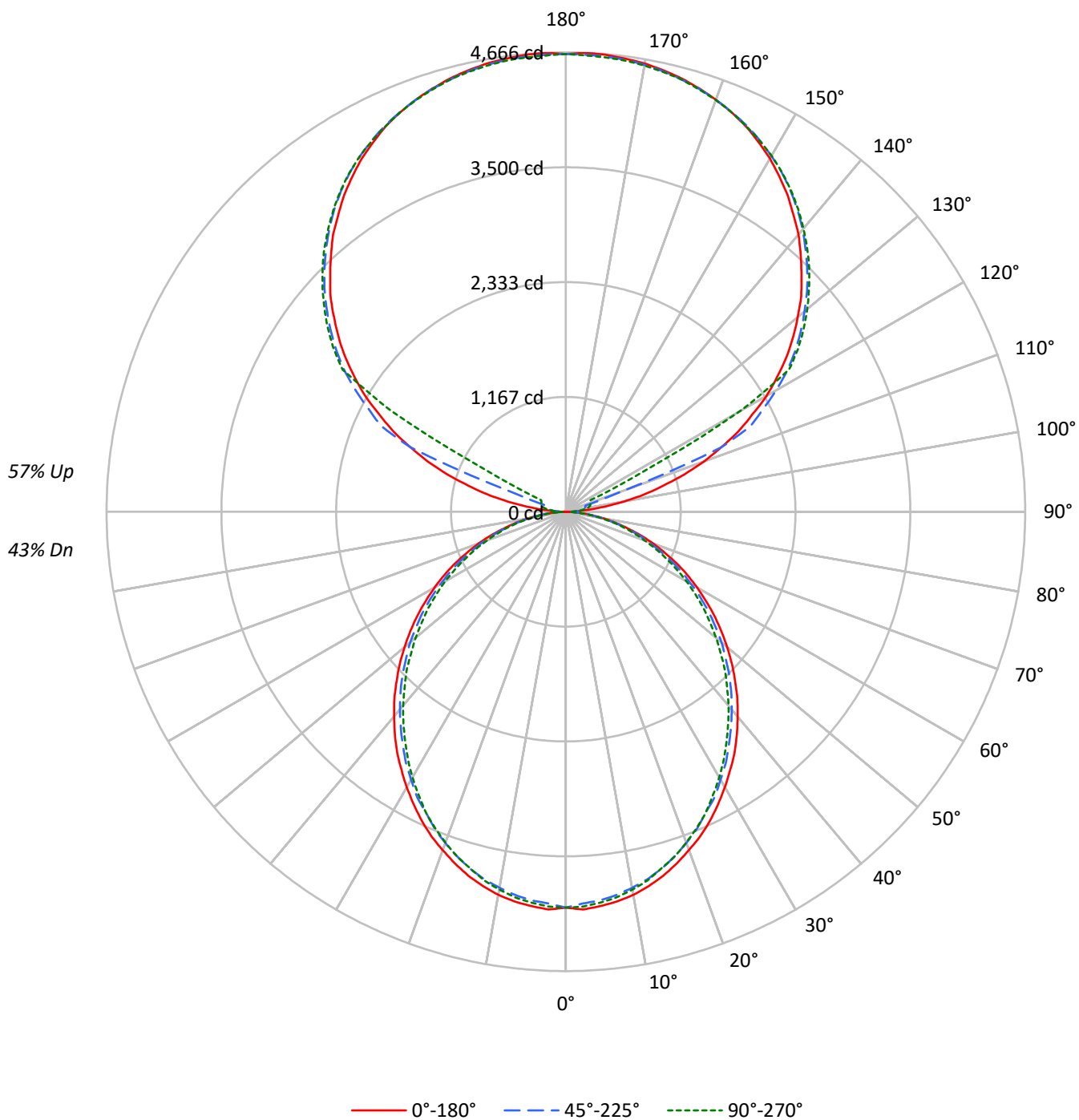
Lumens per Lamp: N/A
Luminaire Lumens: 23866.8 lumens
Efficiency: N/A
Efficacy: 99.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 239.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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	79	79	79	64	64	64	50	50	50
1	96	92	88	85	88	84	81	78	70	67	65	56	55	53	44	43	42
2	88	80	74	69	80	74	68	64	61	57	54	49	47	44	39	37	35
3	80	71	63	58	73	65	58	53	54	49	45	44	40	38	34	32	30
4	73	62	55	49	66	57	50	45	48	43	39	39	35	32	31	28	26
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23
6	62	50	42	36	56	46	39	34	38	33	29	31	27	24	25	22	20
7	57	45	37	32	52	41	34	29	35	29	25	29	25	22	23	20	18
8	53	41	33	28	48	38	31	26	32	26	23	26	22	19	21	18	16
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	27	22	18	22	18	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2821	2821	2821
5°	2825	2782	2801
10°	2802	2745	2764
15°	2761	2701	2706
20°	2705	2638	2646
25°	2650	2564	2576
30°	2581	2494	2488
35°	2515	2413	2394
40°	2434	2330	2305
45°	2353	2247	2214
50°	2265	2160	2109
55°	2172	2060	2012
60°	2067	1940	1902
65°	1954	1817	1771
70°	1808	1667	1631
75°	1607	1487	1502
80°	1365	1257	1255
85°	987	860	843

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2493 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	378.4	1.6
10°-20°	1064.6	4.5
20°-30°	1564.6	6.6
30°-40°	1817.2	7.6
40°-50°	1814.9	7.6
50°-60°	1582.5	6.6
60°-70°	1169.9	4.9
70°-80°	661.9	2.8
80°-90°	182.9	0.8
90°-100°	153.3	0.6
100°-110°	571.5	2.4
110°-120°	1515.7	6.4
120°-130°	2513.9	10.5
130°-140°	2670.3	11.2
140°-150°	2481.8	10.4
150°-160°	1995.3	8.4
160°-170°	1285.7	5.4
170°-180°	442.5	1.9
0°-30°	3007.6	12.6
0°-40°	4824.8	20.2
0°-60°	8222.2	34.5
0°-90°	10236.8	42.9
90°-120°	2240.5	9.4
90°-150°	9906.5	41.5
90°-180°	13630.0	57.1
0°-180°	23866.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4020	4020	4020	4020	4020	
5°	4020	4005	3962	3993	3986	382
15°	3827	3804	3754	3769	3750	1078
25°	3464	3433	3367	3375	3367	1594
35°	2988	2950	2888	2864	2845	1866
45°	2432	2405	2346	2304	2289	1877
55°	1840	1817	1771	1724	1705	1645
65°	1241	1218	1179	1144	1125	1227
75°	649	642	622	599	607	693
85°	158	155	151	139	135	177
90°	3	40	67	84	91	22
95°	218	108	131	148	145	259
105°	1023	1124	205	242	256	1093
115°	1934	1991	2076	518	276	1904
125°	2735	2779	2843	2866	2876	2439
135°	3384	3438	3468	3502	3496	2614
145°	3926	3922	3980	4003	3986	2456
155°	4323	4293	4333	4353	4326	1992
165°	4555	4535	4545	4568	4545	1287
175°	4659	4636	4642	4666	4632	443
180°	4649	4649	4649	4649	4649	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4020.3	4020.3	4020.3	4020.3	4020.3
2.5°	4043.6	4024.3	3981.7	4020.3	4012.9
5°	4020.3	4005.0	3962.4	3993.1	3985.7
7.5°	3993.1	3970.1	3927.5	3958.7	3950.9
10°	3950.9	3923.8	3877.5	3908.2	3896.8
12.5°	3892.7	3869.7	3823.3	3842.6	3834.8
15°	3827.0	3804.1	3753.6	3769.2	3749.9
17.5°	3745.9	3722.9	3672.4	3691.7	3672.4
20°	3656.8	3633.8	3579.8	3591.2	3576.1
22.5°	3568.2	3533.4	3482.9	3482.9	3475.2
25°	3463.6	3432.9	3367.3	3374.7	3367.3
27.5°	3347.6	3320.5	3270.5	3259.0	3239.8
30°	3231.9	3200.8	3142.9	3131.4	3115.9
32.5°	3108.0	3085.1	3023.1	2999.8	2984.2
35°	2988.3	2949.8	2887.8	2864.5	2845.2
37.5°	2852.9	2818.1	2756.1	2729.1	2709.8
40°	2714.0	2682.8	2620.8	2586.4	2570.8
42.5°	2578.6	2547.4	2485.9	2447.0	2424.0
45°	2431.7	2404.7	2346.4	2304.2	2288.6
47.5°	2288.6	2261.5	2199.6	2157.0	2134.0
50°	2137.7	2118.4	2064.2	2010.1	1990.8
52.5°	1990.8	1963.8	1913.7	1871.0	1844.0
55°	1840.3	1817.0	1770.6	1724.2	1704.9
57.5°	1689.4	1670.1	1619.6	1573.3	1557.7
60°	1538.4	1523.3	1469.1	1426.5	1415.0
62.5°	1391.6	1364.5	1326.0	1287.5	1271.9
65°	1241.1	1217.7	1179.1	1144.3	1125.1
67.5°	1086.5	1066.8	1032.3	1005.3	989.7
70°	943.3	927.7	892.9	865.8	850.7
72.5°	796.5	780.9	761.6	734.6	723.1
75°	649.3	641.9	622.2	599.3	607.0
77.5°	518.0	502.4	494.6	483.1	471.7
80°	386.8	382.6	374.9	363.4	355.6
82.5°	262.9	262.9	259.2	243.7	243.7
85°	158.3	154.6	150.9	139.1	135.3
87.5°	69.7	61.9	54.2	42.6	38.6
90°	3.2	40.4	67.1	84.3	90.7
92.5°	84.3	70.7	80.7	87.5	90.7
95°	218.5	107.5	131.0	148.2	144.6
97.5°	393.5	117.9	171.3	181.8	184.9
100°	595.6	134.7	191.7	218.5	225.3
102.5°	817.3	811.0	198.5	235.3	245.6
105°	1022.7	1123.8	205.3	242.1	255.6
107.5°	1261.5	1345.5	212.1	248.9	262.4
110°	1490.5	1560.8	588.8	252.4	265.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1705.8	1766.2	1709.0	258.9	269.2
115°	1934.3	1991.4	2075.7	518.1	276.0
117.5°	2132.9	2199.9	2257.5	1776.2	894.8
120°	2355.0	2405.3	2466.0	2506.4	2052.2
122.5°	2543.1	2597.0	2664.5	2684.5	2688.1
125°	2734.9	2778.8	2842.8	2866.3	2876.3
127.5°	2909.8	2957.0	3007.7	3041.3	3044.5
130°	3074.9	3128.8	3165.5	3202.7	3199.5
132.5°	3243.0	3286.9	3323.7	3354.1	3350.9
135°	3384.4	3438.4	3468.4	3502.3	3495.5
137.5°	3532.2	3572.6	3606.5	3640.1	3630.1
140°	3676.9	3704.0	3740.8	3771.2	3754.4
142.5°	3798.3	3821.9	3865.4	3892.2	3875.4
145°	3926.2	3922.5	3979.7	4003.2	3986.5
147.5°	4036.8	4026.8	4084.0	4100.8	4087.5
150°	4144.7	4121.1	4175.1	4195.0	4178.3
152.5°	4235.3	4208.6	4258.9	4279.3	4255.7
155°	4322.8	4292.8	4333.2	4353.2	4326.4
157.5°	4393.6	4366.8	4397.1	4420.7	4393.6
160°	4454.3	4433.9	4454.3	4474.3	4450.7
162.5°	4507.8	4487.9	4504.6	4528.2	4497.9
165°	4554.9	4535.0	4544.9	4568.5	4544.9
167.5°	4592.1	4571.7	4582.1	4605.6	4575.3
170°	4622.4	4602.1	4608.8	4632.4	4602.1
172.5°	4642.4	4622.4	4629.2	4652.8	4622.4
175°	4659.2	4635.6	4642.4	4666.0	4632.4
177.5°	4666.0	4642.4	4646.0	4669.6	4639.2
180°	4649.2	4649.2	4649.2	4649.2	4649.2

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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	10.19	10.99	11.21	12.02	13.39	9.75	10.55	10.76	11.57	12.94
	3H	11.85	12.57	12.88	13.60	14.99	11.36	12.08	12.39	13.11	14.50
	4H	12.44	13.12	13.48	14.16	15.55	11.95	12.63	12.98	13.66	15.06
	6H	12.84	13.47	13.89	14.51	15.92	12.34	12.97	13.39	14.01	15.42
	8H	12.95	13.54	14.00	14.60	16.00	12.44	13.04	13.50	14.10	15.50
	12H	12.99	13.56	14.05	14.61	16.04	12.48	13.05	13.54	14.10	15.53
4H	2H	10.65	11.33	11.69	12.36	13.76	10.29	10.97	11.34	12.01	13.41
	3H	12.51	13.08	13.57	14.14	15.55	12.10	12.67	13.16	13.74	15.15
	4H	13.23	13.75	14.29	14.80	16.24	12.80	13.32	13.86	14.38	15.81
	6H	13.74	14.19	14.81	15.27	16.70	13.31	13.76	14.38	14.84	16.26
	8H	13.89	14.31	14.96	15.38	16.83	13.46	13.87	14.53	14.95	16.39
	12H	13.97	14.34	15.05	15.43	16.88	13.52	13.89	14.60	14.98	16.43
8H	4H	13.42	13.84	14.49	14.91	16.35	13.04	13.46	14.11	14.53	15.97
	6H	14.05	14.40	15.15	15.51	16.95	13.67	14.01	14.76	15.13	16.57
	8H	14.28	14.58	15.38	15.68	17.13	13.88	14.19	14.98	15.28	16.74
	12H	14.41	14.67	15.51	15.77	17.26	14.00	14.26	15.10	15.36	16.85
12H	4H	13.40	13.78	14.49	14.87	16.31	13.03	13.41	14.12	14.50	15.94
	6H	14.08	14.39	15.18	15.48	16.94	13.71	14.01	14.81	15.11	16.57
	8H	14.32	14.59	15.43	15.68	17.18	13.95	14.21	15.05	15.30	16.80