

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: P912437

Luminaire Tested: DFN2DIP-SQ4F0-160D140US850-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912437
REPORT IS A COMBINATION OF REPORTS P901721 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D140US850-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

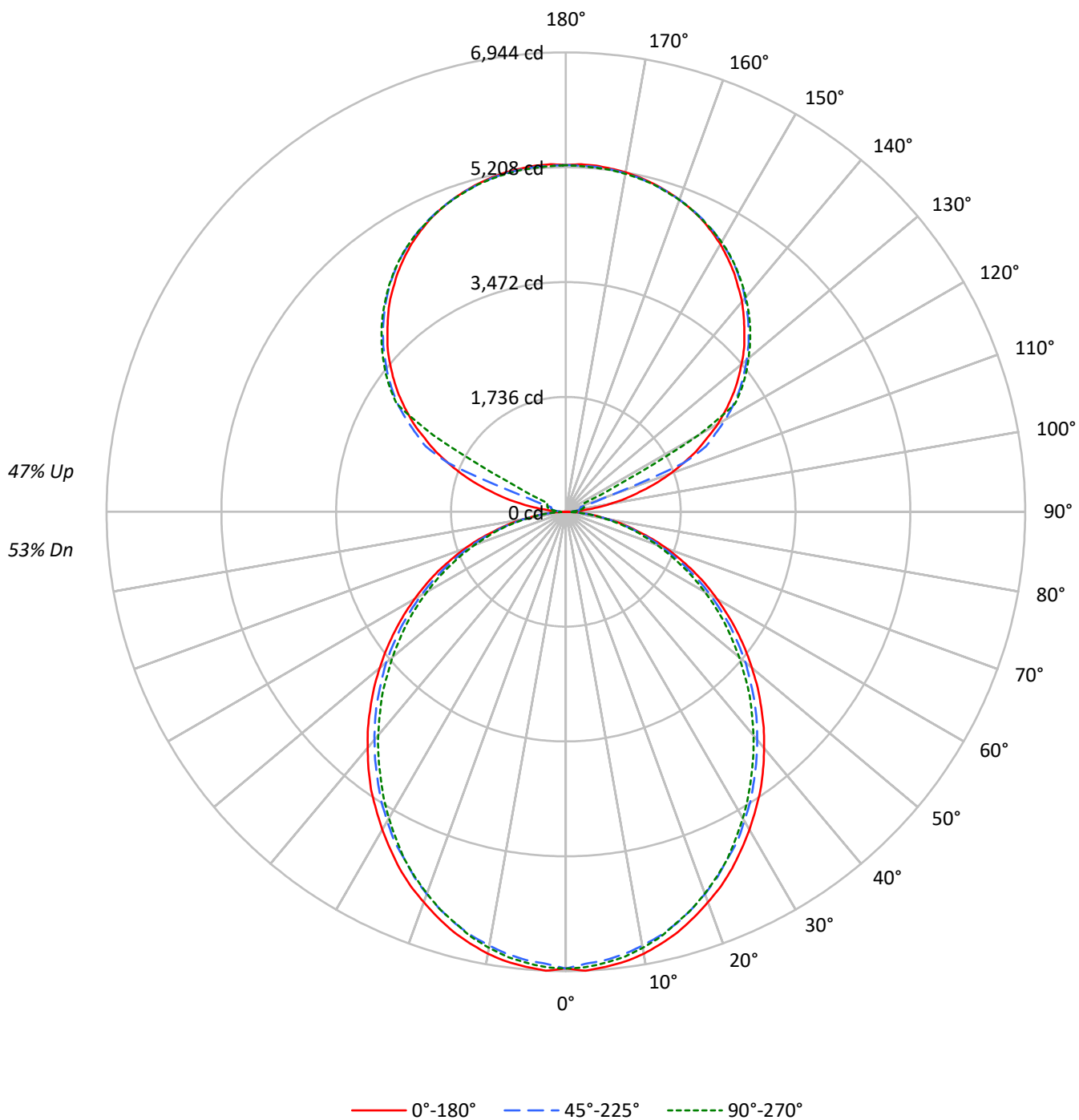
Lumens per Lamp: N/A
Luminaire Lumens: 32937.2 lumens
Efficiency: N/A
Efficacy: 120.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 272.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	59	59	59
1	99	94	90	87	91	87	84	81	75	72	70	63	61	60	52	51	50
2	90	82	76	71	83	76	71	66	65	61	58	55	52	50	46	44	42
3	82	72	65	59	76	67	61	56	58	53	49	49	45	42	41	38	36
4	75	64	56	50	69	60	53	47	51	46	42	44	40	36	37	33	31
5	69	57	49	43	63	53	46	41	46	40	36	39	35	31	33	30	27
6	63	51	43	37	59	48	41	35	41	36	31	35	31	28	30	26	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	27	34	29	25	30	25	22	25	22	19
9	51	38	31	26	47	36	29	25	31	26	22	27	23	20	23	20	17
10	47	35	28	23	44	33	26	22	29	24	20	25	21	18	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4845	4845	4845
5°	4852	4778	4811
10°	4813	4715	4747
15°	4742	4638	4646
20°	4646	4531	4544
25°	4551	4403	4425
30°	4432	4284	4273
35°	4319	4143	4112
40°	4180	4002	3959
45°	4041	3859	3803
50°	3889	3710	3622
55°	3730	3538	3456
60°	3551	3332	3266
65°	3355	3120	3041
70°	3106	2862	2801
75°	2760	2553	2580
80°	2344	2159	2156
85°	1695	1477	1448

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4041 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	649.8	2.0
10°-20°	1828.4	5.6
20°-30°	2687.0	8.2
30°-40°	3120.8	9.5
40°-50°	3116.9	9.5
50°-60°	2717.8	8.3
60°-70°	2009.1	6.1
70°-80°	1136.7	3.5
80°-90°	309.2	0.9
90°-100°	172.8	0.5
100°-110°	644.1	2.0
110°-120°	1708.2	5.2
120°-130°	2833.3	8.6
130°-140°	3009.6	9.1
140°-150°	2797.1	8.5
150°-160°	2248.8	6.8
160°-170°	1449.0	4.4
170°-180°	498.7	1.5
0°-30°	5165.2	15.7
0°-40°	8286.0	25.2
0°-60°	14120.7	42.9
0°-90°	17575.7	53.4
90°-120°	2525.1	7.7
90°-150°	11165.0	33.9
90°-180°	15362.0	46.6
0°-180°	32937.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6904	6904	6904	6904	6904	
5°	6904	6878	6805	6858	6845	655
15°	6572	6533	6446	6473	6440	1851
25°	5948	5896	5783	5796	5783	2737
35°	5132	5066	4959	4919	4886	3205
45°	4176	4130	4030	3957	3930	3223
55°	3160	3120	3041	2961	2928	2826
65°	2131	2091	2025	1965	1932	2107
75°	1115	1102	1068	1029	1042	1190
85°	272	266	259	239	232	303
90°	4	46	76	95	102	30
95°	246	121	148	167	163	292
105°	1153	1266	231	273	288	1231
115°	2180	2244	2339	584	311	2146
125°	3082	3132	3204	3230	3242	2749
135°	3814	3875	3909	3947	3940	2947
145°	4425	4421	4485	4512	4493	2767
155°	4872	4838	4884	4906	4876	2245
165°	5134	5111	5122	5149	5122	1450
175°	5251	5224	5232	5259	5221	500
180°	5240	5240	5240	5240	5240	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6904.3	6904.3	6904.3	6904.3	6904.3
2.5°	6944.4	6911.3	6838.1	6904.3	6891.5
5°	6904.3	6878.2	6804.9	6857.8	6845.1
7.5°	6857.8	6818.4	6745.0	6798.6	6785.2
10°	6785.2	6738.7	6659.2	6712.0	6692.3
12.5°	6685.3	6645.8	6566.2	6599.3	6585.9
15°	6572.5	6533.1	6446.4	6473.2	6440.1
17.5°	6433.1	6393.6	6307.0	6340.0	6307.0
20°	6280.2	6240.8	6147.7	6167.5	6141.4
22.5°	6128.1	6068.2	5981.5	5981.5	5968.2
25°	5948.5	5895.7	5782.9	5795.6	5782.9
27.5°	5749.1	5702.6	5616.6	5597.0	5563.9
30°	5550.4	5497.0	5397.6	5377.9	5351.1
32.5°	5337.7	5298.4	5191.9	5151.7	5125.0
35°	5132.1	5065.9	4959.4	4919.3	4886.3
37.5°	4899.7	4839.8	4733.4	4686.9	4653.8
40°	4660.8	4607.3	4501.0	4441.8	4415.0
42.5°	4428.5	4374.9	4269.2	4202.3	4162.9
45°	4176.3	4129.7	4029.8	3957.1	3930.4
47.5°	3930.4	3883.9	3777.6	3704.3	3664.9
50°	3671.2	3638.1	3545.1	3452.1	3419.0
52.5°	3419.0	3372.6	3286.6	3213.3	3166.9
55°	3160.5	3120.4	3040.8	2961.1	2928.1
57.5°	2901.4	2868.2	2781.6	2702.0	2675.2
60°	2642.1	2616.0	2523.1	2449.8	2430.0
62.5°	2389.9	2343.4	2277.2	2211.0	2184.3
65°	2131.4	2091.2	2025.0	1965.3	1932.1
67.5°	1865.9	1832.1	1773.0	1726.4	1699.7
70°	1620.0	1593.3	1533.4	1486.9	1460.9
72.5°	1367.8	1341.1	1308.1	1261.5	1241.9
75°	1115.0	1102.3	1068.5	1029.0	1042.5
77.5°	889.6	862.9	849.5	829.8	810.0
80°	664.2	657.2	643.8	624.0	610.7
82.5°	451.5	451.5	445.2	418.4	418.4
85°	271.9	265.5	259.2	238.8	232.4
87.5°	119.8	106.4	92.9	73.3	66.2
90°	3.5	45.5	75.6	95.0	102.2
92.5°	95.0	79.7	90.9	98.6	102.2
95°	246.3	121.1	147.7	167.0	163.0
97.5°	443.5	132.9	193.2	204.8	208.5
100°	671.3	151.7	216.1	246.3	254.0
102.5°	921.1	913.9	223.8	265.2	276.9
105°	1152.6	1266.5	231.4	272.8	288.1
107.5°	1421.8	1516.3	239.1	280.5	295.8
110°	1679.8	1759.1	663.6	284.6	299.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1922.5	1990.4	1926.1	291.8	303.4
115°	2180.1	2244.4	2339.4	584.0	311.1
117.5°	2403.8	2479.4	2544.3	2001.7	1008.5
120°	2654.2	2710.8	2779.3	2824.7	2312.8
122.5°	2866.2	2927.0	3003.1	3025.6	3029.7
125°	3082.4	3131.8	3203.9	3230.4	3241.7
127.5°	3279.5	3332.7	3389.8	3427.6	3431.2
130°	3465.4	3526.3	3567.7	3609.6	3605.9
132.5°	3655.0	3704.5	3746.0	3780.1	3776.6
135°	3814.4	3875.2	3908.9	3947.2	3939.5
137.5°	3981.0	4026.4	4064.7	4102.5	4091.3
140°	4144.0	4174.6	4216.0	4250.2	4231.3
142.5°	4280.9	4307.4	4356.5	4386.6	4367.7
145°	4424.9	4420.8	4485.2	4511.9	4492.9
147.5°	4549.7	4538.4	4602.8	4621.6	4606.8
150°	4671.2	4644.6	4705.4	4727.9	4709.0
152.5°	4773.4	4743.2	4800.0	4822.9	4796.3
155°	4871.9	4838.2	4883.7	4906.2	4876.1
157.5°	4951.7	4921.5	4955.8	4982.3	4951.7
160°	5020.1	4997.2	5020.1	5042.6	5016.1
162.5°	5080.4	5057.9	5076.9	5103.4	5069.2
165°	5133.6	5111.0	5122.4	5148.9	5122.4
167.5°	5175.5	5152.5	5164.2	5190.8	5156.5
170°	5209.6	5186.7	5194.3	5221.0	5186.7
172.5°	5232.2	5209.6	5217.3	5243.9	5209.6
175°	5251.1	5224.5	5232.2	5258.8	5221.0
177.5°	5258.8	5232.2	5236.3	5262.8	5228.6
180°	5239.8	5239.8	5239.8	5239.8	5239.8

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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	13.07	13.96	14.00	14.91	16.13	12.63	13.52	13.56	14.47	15.69
	3H	14.74	15.54	15.68	16.49	17.74	14.25	15.05	15.19	16.00	17.25
	4H	15.33	16.09	16.28	17.05	18.30	14.84	15.59	15.79	16.55	17.81
	6H	15.74	16.43	16.70	17.40	18.67	15.24	15.93	16.20	16.90	18.17
	8H	15.84	16.51	16.82	17.49	18.76	15.34	16.01	16.31	16.99	18.25
	12H	15.89	16.53	16.87	17.50	18.79	15.38	16.02	16.36	16.99	18.28
4H	2H	13.54	14.29	14.50	15.25	16.51	13.18	13.94	14.14	14.90	16.15
	3H	15.41	16.04	16.38	17.03	18.30	15.00	15.64	15.97	16.62	17.89
	4H	16.13	16.71	17.11	17.69	18.98	15.71	16.28	16.68	17.27	18.56
	6H	16.65	17.15	17.64	18.16	19.45	16.22	16.72	17.21	17.72	19.01
	8H	16.80	17.27	17.80	18.27	19.57	16.37	16.83	17.36	17.83	19.14
	12H	16.88	17.30	17.89	18.32	19.63	16.43	16.85	17.44	17.87	19.18
8H	4H	16.33	16.79	17.32	17.79	19.10	15.95	16.42	16.94	17.42	18.72
	6H	16.97	17.35	17.98	18.39	19.70	16.58	16.97	17.60	18.01	19.31
	8H	17.19	17.53	18.22	18.56	19.88	16.80	17.14	17.82	18.17	19.49
	12H	17.33	17.63	18.36	18.65	20.02	16.92	17.21	17.94	18.24	19.60
12H	4H	16.32	16.74	17.33	17.75	19.06	15.95	16.37	16.96	17.38	18.70
	6H	17.00	17.34	18.02	18.37	19.69	16.63	16.97	17.65	17.99	19.32
	8H	17.24	17.54	18.27	18.56	19.93	16.86	17.16	17.89	18.18	19.55