

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: P923343

Luminaire Tested: DFN2DIP-SQ4F0-160D110US940-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923343
REPORT IS A COMBINATION OF REPORTS P901686 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US940-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

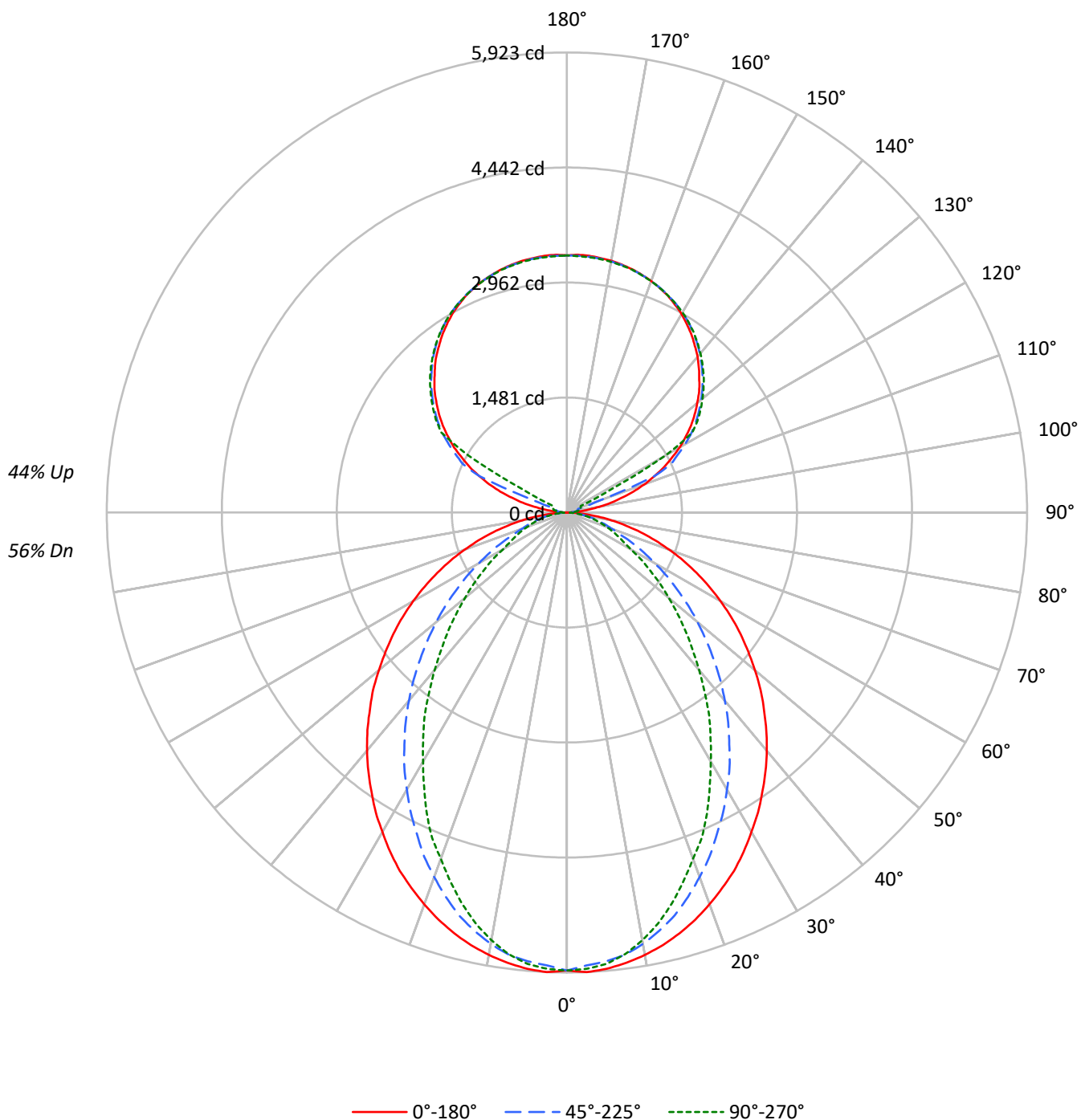
Lumens per Lamp: N/A
Luminaire Lumens: 21837.9 lumens
Efficiency: N/A
Efficacy: 87.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 249.5
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

TEST NUMBER: P923343

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P923343

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLLONL

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	101	101	101	101	86	86	86	73	73	73	61	61	61
1	100	95	92	88	92	89	86	83	77	74	72	65	64	62	55	54	53
2	91	84	78	73	84	78	73	69	68	64	61	58	55	53	49	47	45
3	83	74	67	62	77	69	63	58	60	56	52	52	48	45	44	41	39
4	77	66	58	53	71	62	55	50	54	49	44	47	43	39	40	37	34
5	71	59	51	45	65	56	48	43	49	43	39	42	38	34	36	33	30
6	65	53	45	40	61	50	43	38	44	38	34	38	34	30	33	29	27
7	60	48	41	35	56	46	38	33	40	34	30	35	30	27	30	27	24
8	56	44	36	31	52	42	35	30	37	31	27	32	28	24	28	24	22
9	52	40	33	28	49	38	31	27	34	28	24	30	25	22	26	22	20
10	49	37	30	25	46	35	29	24	31	26	22	27	23	20	24	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4138	4138	4138
5°	4144	4073	4099
10°	4103	3994	3967
15°	4046	3862	3762
20°	3972	3681	3510
25°	3895	3478	3266
30°	3792	3269	2957
35°	3692	3045	2685
40°	3589	2813	2374
45°	3470	2556	2091
50°	3347	2295	1815
55°	3218	2017	1550
60°	3069	1726	1277
65°	2898	1431	1151
70°	2691	1155	1043
75°	2430	1020	951
80°	2053	858	829
85°	1429	578	632

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3470 cd/sqm

TEST NUMBER: P923343

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	552.6	2.5
10°-20°	1517.1	6.9
20°-30°	2130.0	9.8
30°-40°	2321.8	10.6
40°-50°	2134.0	9.8
50°-60°	1675.9	7.7
60°-70°	1090.9	5.0
70°-80°	561.5	2.6
80°-90°	149.2	0.7
90°-100°	109.2	0.5
100°-110°	406.9	1.9
110°-120°	1079.2	4.9
120°-130°	1789.9	8.2
130°-140°	1901.3	8.7
140°-150°	1767.1	8.1
150°-160°	1420.7	6.5
160°-170°	915.4	4.2
170°-180°	315.1	1.4
0°-30°	4199.7	19.2
0°-40°	6521.6	29.9
0°-60°	10331.5	47.3
0°-90°	12133.1	55.6
90°-120°	1595.3	7.3
90°-150°	7053.7	32.3
90°-180°	9705.0	44.4
0°-180°	21837.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5897	5897	5897	5897	5897	
5°	5897	5870	5800	5848	5833	559
15°	5608	5550	5368	5267	5214	1580
25°	5091	4920	4568	4349	4269	2341
35°	4387	4114	3645	3309	3191	2746
45°	3586	3228	2668	2289	2161	2769
55°	2727	2310	1734	1414	1313	2437
65°	1841	1409	928	747	731	1825
75°	982	608	427	390	384	1038
85°	229	117	101	101	101	263
90°	2	29	48	60	65	21
95°	156	76	93	106	103	184
105°	728	800	146	172	182	778
115°	1377	1418	1478	369	196	1356
125°	1947	1979	2024	2041	2048	1737
135°	2410	2448	2470	2494	2489	1862
145°	2796	2793	2834	2850	2838	1748
155°	3078	3057	3085	3100	3080	1418
165°	3243	3229	3236	3253	3236	916
175°	3317	3301	3306	3322	3298	316
180°	3310	3310	3310	3310	3310	

TEST NUMBER: P923343

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5896.7	5896.7	5896.7	5896.7	5896.7
2.5°	5923.3	5896.7	5837.8	5891.6	5880.8
5°	5896.7	5870.0	5800.4	5848.5	5832.7
7.5°	5848.5	5816.8	5742.1	5763.0	5736.5
10°	5784.6	5747.3	5640.8	5624.4	5592.6
12.5°	5704.7	5656.7	5512.3	5480.5	5421.7
15°	5608.5	5549.6	5368.5	5267.1	5213.8
17.5°	5496.4	5410.9	5186.7	5069.5	4984.0
20°	5368.5	5261.4	4994.7	4861.7	4744.0
22.5°	5229.7	5106.8	4797.1	4616.0	4536.1
25°	5091.0	4920.0	4567.9	4349.3	4269.0
27.5°	4925.7	4744.0	4354.4	4103.7	3980.8
30°	4749.6	4546.4	4119.4	3847.7	3703.4
32.5°	4578.7	4332.9	3895.8	3575.4	3441.7
35°	4386.7	4114.4	3645.0	3308.7	3191.0
37.5°	4199.9	3906.0	3410.1	3041.4	2908.4
40°	4002.3	3682.4	3164.3	2785.5	2646.9
42.5°	3799.6	3458.1	2919.2	2524.0	2390.9
45°	3586.1	3228.3	2668.4	2289.0	2161.1
47.5°	3383.4	3004.7	2428.3	2049.0	1931.8
50°	3159.2	2780.4	2193.3	1824.8	1713.2
52.5°	2940.1	2539.9	1969.2	1617.0	1515.6
55°	2726.7	2310.5	1734.2	1414.3	1313.0
57.5°	2508.1	2081.3	1526.4	1227.4	1141.9
60°	2283.9	1857.1	1307.2	1035.5	950.0
62.5°	2065.4	1638.5	1120.4	864.5	822.1
65°	1841.2	1408.6	928.5	747.3	730.9
67.5°	1627.7	1195.2	747.3	656.2	640.3
70°	1403.6	987.4	618.8	565.6	544.1
72.5°	1190.1	794.9	517.5	475.0	464.2
75°	981.8	608.1	426.9	389.5	384.4
77.5°	773.9	431.9	336.3	314.8	304.1
80°	581.5	309.7	255.9	235.0	235.0
82.5°	405.4	208.4	176.1	165.3	165.3
85°	229.3	117.2	101.4	101.4	101.4
87.5°	85.5	42.4	42.4	37.4	37.4
90°	2.3	28.7	47.8	60.0	64.6
92.5°	60.0	50.4	57.4	62.3	64.6
95°	155.6	76.5	93.3	105.5	103.0
97.5°	280.2	83.9	122.0	129.4	131.7
100°	424.1	95.9	136.5	155.6	160.4
102.5°	581.9	577.4	141.3	167.6	175.0
105°	728.2	800.1	146.2	172.4	182.1
107.5°	898.3	958.0	151.1	177.2	186.9
110°	1061.2	1111.3	419.3	179.8	189.1

TEST NUMBER: P923343

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1214.6	1257.5	1216.8	184.3	191.7
115°	1377.2	1417.9	1478.0	368.9	196.5
117.5°	1518.7	1566.5	1607.4	1264.6	637.1
120°	1676.8	1712.6	1755.9	1784.6	1461.2
122.5°	1810.8	1849.1	1897.2	1911.5	1914.1
125°	1947.3	1978.6	2024.1	2040.9	2048.0
127.5°	2071.9	2105.4	2141.5	2165.4	2167.7
130°	2189.3	2227.8	2253.9	2280.4	2278.1
132.5°	2309.1	2340.4	2366.6	2388.2	2385.9
135°	2409.8	2448.2	2469.5	2493.8	2488.9
137.5°	2515.1	2543.8	2567.9	2591.8	2584.7
140°	2618.1	2637.3	2663.5	2685.1	2673.2
142.5°	2704.5	2721.2	2752.3	2771.3	2759.4
145°	2795.5	2792.9	2833.6	2850.4	2838.5
147.5°	2874.3	2867.2	2907.9	2919.8	2910.5
150°	2951.1	2934.4	2972.7	2987.0	2975.0
152.5°	3015.7	2996.6	3032.4	3047.0	3030.2
155°	3078.0	3056.6	3085.3	3099.6	3080.5
157.5°	3128.3	3109.2	3130.9	3147.6	3128.3
160°	3171.5	3157.0	3171.5	3185.7	3169.0
162.5°	3209.6	3195.4	3207.4	3224.2	3202.6
165°	3243.2	3229.0	3236.1	3252.9	3236.1
167.5°	3269.6	3255.2	3262.6	3279.4	3257.8
170°	3291.3	3276.8	3281.6	3298.4	3276.8
172.5°	3305.5	3291.3	3296.1	3312.9	3291.3
175°	3317.4	3300.7	3305.5	3322.3	3298.4
177.5°	3322.3	3305.5	3308.1	3324.8	3303.3
180°	3310.4	3310.4	3310.4	3310.4	3310.4

TEST NUMBER: P923343

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLONL

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	12.60	13.48	13.51	14.40	15.60	8.56	9.44	9.47	10.36	11.56
	3H	14.28	15.07	15.21	16.01	17.22	9.75	10.54	10.68	11.47	12.69
	4H	14.90	15.64	15.84	16.58	17.81	10.20	10.95	11.15	11.89	13.11
	6H	15.33	16.01	16.28	16.96	18.19	10.53	11.21	11.48	12.16	13.40
	8H	15.46	16.10	16.41	17.07	18.31	10.62	11.27	11.58	12.24	13.47
	12H	15.52	16.14	16.49	17.10	18.36	10.67	11.28	11.63	12.24	13.50
4H	2H	12.62	13.36	13.57	14.31	15.53	9.16	9.90	10.11	10.85	12.07
	3H	14.46	15.08	15.42	16.05	17.29	10.52	11.13	11.47	12.11	13.35
	4H	15.16	15.72	16.12	16.69	17.95	11.07	11.63	12.03	12.60	13.86
	6H	15.68	16.16	16.66	17.15	18.42	11.49	11.97	12.47	12.97	14.23
	8H	15.86	16.31	16.84	17.29	18.57	11.62	12.07	12.60	13.06	14.33
	12H	15.96	16.36	16.96	17.37	18.65	11.69	12.10	12.69	13.10	14.38
8H	4H	15.13	15.58	16.11	16.56	17.84	11.35	11.81	12.33	12.79	14.07
	6H	15.70	16.07	16.71	17.10	18.38	11.88	12.25	12.88	13.27	14.55
	8H	15.92	16.25	16.94	17.26	18.56	12.07	12.40	13.08	13.41	14.71
	12H	16.07	16.35	17.08	17.36	18.70	12.19	12.48	13.21	13.49	14.83
12H	4H	15.08	15.49	16.08	16.49	17.77	11.36	11.77	12.36	12.77	14.05
	6H	15.68	16.01	16.69	17.02	18.31	11.93	12.26	12.94	13.27	14.56
	8H	15.90	16.19	16.92	17.20	18.54	12.14	12.43	13.16	13.44	14.78