

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: P912420

Luminaire Tested: DFN2DIP-SQ4F0-160D090US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912420
REPORT IS A COMBINATION OF REPORTS P900129 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D090US850-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

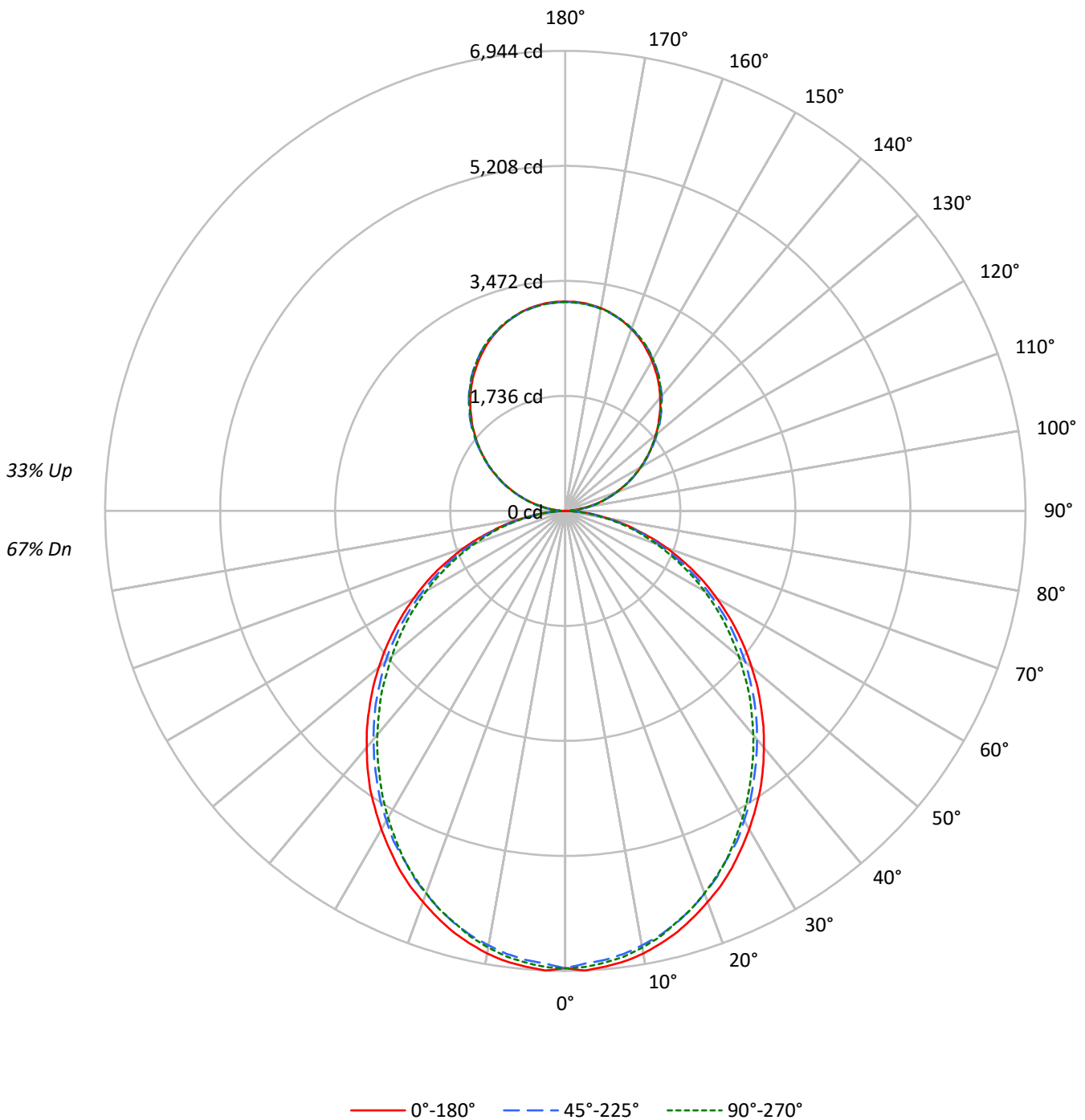
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 26399.7 lumens
Efficiency: N/A
Efficacy: 113.1 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: Semi-Direct

Input Watts (W): 233.4
Input Voltage (V):
Input Current (A_{in}): 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: P912420
CATALOG NUMBER: DFN2DIP-SQ4F0-160D090US850-FLLFLL

Luminous Intensity Polar Plot





TEST NUMBER: P912420

CATALOG NUMBER: DFN2DIP-SQ4F0-160D090US850-FLLFLL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	111	111	111	111	105	105	105	105	93	93	93	81	81	81	71	71	71	67				67
1	102	97	93	89	95	92	88	85	81	79	76	72	70	68	63	62	60	56				56
2	92	85	78	73	87	80	74	70	71	67	63	63	60	57	56	53	51	47				47
3	84	75	67	61	79	71	64	58	63	58	53	56	52	48	49	46	43	40				40
4	77	66	58	52	72	63	55	50	56	50	45	50	45	41	44	40	37	34				34
5	71	59	51	44	67	56	48	43	50	44	39	45	40	36	40	36	33	30				30
6	66	53	45	39	61	50	43	37	45	39	34	41	35	31	36	32	29	26				26
7	61	48	40	34	57	46	38	33	41	35	30	37	32	28	33	29	26	23				23
8	56	44	36	30	53	42	34	29	38	31	27	34	29	25	30	26	23	21				21
9	53	40	32	27	49	38	31	26	35	29	24	31	26	23	28	24	21	19				19
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19	17				17

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



TEST NUMBER: P912420

CATALOG NUMBER: DFN2DIP-SQ4F0-160D090US850-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	649.8	2.5
10°-20°	1828.4	6.9
20°-30°	2687.0	10.2
30°-40°	3120.8	11.8
40°-50°	3116.9	11.8
50°-60°	2717.8	10.3
60°-70°	2009.1	7.6
70°-80°	1136.7	4.3
80°-90°	309.0	1.2
90°-100°	195.3	0.7
100°-110°	620.6	2.4
110°-120°	1062.1	4.0
120°-130°	1396.8	5.3
130°-140°	1567.9	5.9
140°-150°	1537.5	5.8
150°-160°	1289.7	4.9
160°-170°	855.3	3.2
170°-180°	299.0	1.1
0°-30°	5165.2	19.6
0°-40°	8286.0	31.4
0°-60°	14120.7	53.5
0°-90°	17575.5	66.6
90°-120°	1878.1	7.1
90°-150°	6380.2	24.2
90°-180°	8824.0	33.4
0°-180°	26399.7	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°	3	34	93	88	90	25
95°	139	166	170	170	166	155
105°	573	580	586	591	591	605
115°	1066	1081	1076	1074	1066	1054
125°	1550	1574	1566	1558	1555	1385
135°	2005	2035	2040	2038	2030	1550
145°	2434	2453	2468	2471	2461	1521
155°	2784	2791	2800	2813	2805	1281
165°	3028	3025	3025	3044	3031	854
175°	3151	3143	3138	3157	3140	299
180°	3157	3157	3157	3157	3157	



TEST NUMBER: P912420

CATALOG NUMBER: DFN2DIP-SQ4F0-160D090US850-FLLFLL

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°	2.9	34.3	93.3	87.5	90.4
92.5°	59.0	80.0	82.8	85.6	85.6
95°	139.0	165.6	170.3	170.3	165.6
97.5°	231.2	256.0	266.5	266.5	266.5
100°	337.8	359.8	367.3	367.3	364.5
102.5°	450.1	466.3	476.8	479.6	476.8
105°	572.9	580.5	586.2	591.0	591.0
107.5°	694.7	706.1	706.1	708.0	694.7
110°	812.7	828.0	828.0	828.0	820.3



TEST NUMBER: P912420

CATALOG NUMBER: DFN2DIP-SQ4F0-160D090US850-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	940.2	956.4	953.5	946.0	940.2
115°	1065.9	1081.1	1076.3	1073.5	1065.9
117.5°	1190.5	1211.5	1198.2	1190.5	1182.9
120°	1316.2	1337.0	1316.2	1316.2	1307.5
122.5°	1430.3	1457.0	1443.7	1436.0	1430.3
125°	1550.3	1574.0	1566.5	1557.8	1555.0
127.5°	1667.3	1696.8	1686.3	1674.9	1667.3
130°	1776.7	1811.0	1806.2	1800.5	1790.0
132.5°	1899.5	1926.1	1928.0	1914.7	1907.1
135°	2005.1	2034.6	2040.3	2037.5	2029.9
137.5°	2123.1	2146.9	2151.7	2149.8	2138.4
140°	2226.9	2250.6	2263.9	2263.9	2253.5
142.5°	2333.4	2357.2	2364.8	2367.7	2357.2
145°	2434.4	2453.3	2468.5	2471.4	2461.0
147.5°	2524.7	2548.5	2559.9	2564.7	2554.2
150°	2618.0	2634.2	2644.6	2653.2	2644.6
152.5°	2700.7	2716.9	2730.2	2740.8	2730.2
155°	2783.6	2791.1	2799.8	2813.1	2804.6
157.5°	2854.9	2860.7	2865.4	2884.4	2871.1
160°	2918.7	2924.4	2927.3	2943.4	2932.0
162.5°	2977.7	2977.7	2980.5	2998.6	2985.3
165°	3028.1	3025.2	3025.2	3044.3	3031.0
167.5°	3073.8	3065.3	3065.3	3084.2	3070.9
170°	3108.1	3100.4	3097.7	3116.6	3100.4
172.5°	3131.8	3124.3	3121.4	3140.5	3124.3
175°	3150.9	3143.2	3137.6	3156.7	3140.5
177.5°	3161.3	3153.8	3148.0	3164.2	3148.0
180°	3156.7	3156.7	3156.7	3156.7	3156.7



TEST NUMBER: P912420
 CATALOG NUMBER: DFN2DIP-SQ4F0-160D090US850-FLLFLL

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	14.17	15.20	14.97	16.03	17.04	13.73	14.76	14.53	15.58	16.59
	3H	15.85	16.78	16.66	17.61	18.65	15.36	16.28	16.17	17.12	18.16
	4H	16.45	17.32	17.28	18.16	19.21	15.95	16.83	16.78	17.67	18.72
	6H	16.86	17.67	17.70	18.51	19.58	16.36	17.17	17.20	18.01	19.08
	8H	16.97	17.74	17.82	18.61	19.67	16.47	17.24	17.32	18.10	19.17
	12H	17.02	17.76	17.88	18.62	19.71	16.52	17.25	17.37	18.11	19.20
4H	2H	14.65	15.53	15.49	16.37	17.42	14.30	15.17	15.13	16.01	17.07
	3H	16.54	17.27	17.38	18.14	19.21	16.13	16.86	16.98	17.74	18.80
	4H	17.26	17.93	18.12	18.80	19.90	16.84	17.51	17.70	18.38	19.47
	6H	17.79	18.37	18.67	19.26	20.36	17.36	17.94	18.23	18.83	19.93
	8H	17.95	18.49	18.83	19.38	20.49	17.51	18.05	18.39	18.94	20.05
	12H	18.03	18.52	18.93	19.43	20.54	17.58	18.07	18.48	18.98	20.09
8H	4H	17.47	18.01	18.35	18.90	20.01	17.10	17.64	17.97	18.53	19.64
	6H	18.12	18.56	19.02	19.49	20.61	17.73	18.18	18.64	19.11	20.22
	8H	18.34	18.74	19.26	19.66	20.79	17.95	18.34	18.87	19.27	20.40
	12H	18.48	18.83	19.40	19.75	20.93	18.07	18.42	18.99	19.34	20.52
12H	4H	17.47	17.95	18.37	18.86	19.98	17.10	17.58	18.00	18.49	19.61
	6H	18.15	18.54	19.06	19.47	20.60	17.78	18.17	18.69	19.10	20.23
	8H	18.40	18.75	19.32	19.67	20.85	18.02	18.37	18.94	19.29	20.47