

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: P912231

Luminaire Tested: DFN2DIP-SQ4F0-090D060US850-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912231
REPORT IS A COMBINATION OF REPORTS P901586 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D060US850-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

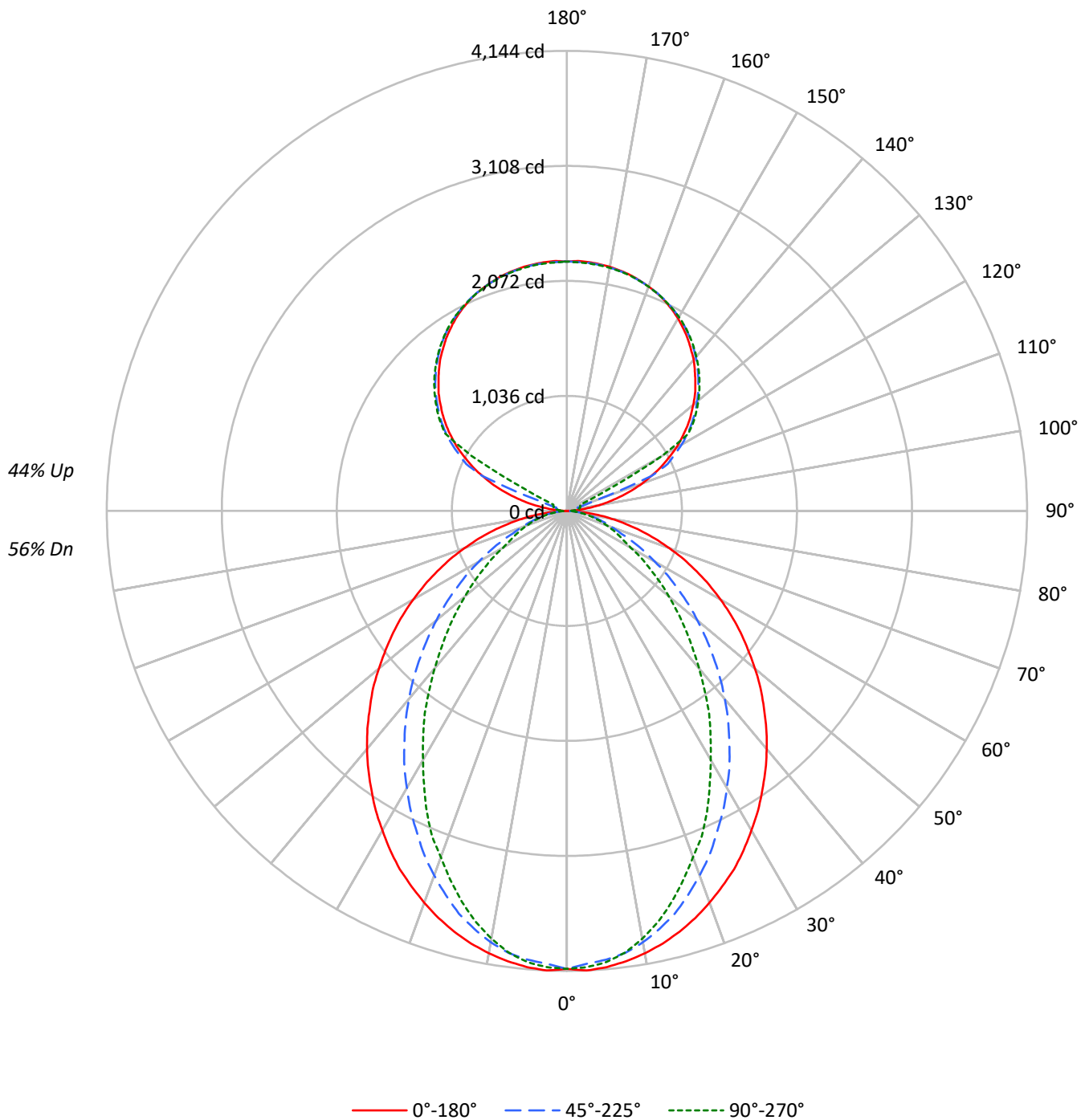
Lumens per Lamp: N/A
Luminaire Lumens: 15071.3 lumens
Efficiency: N/A
Efficacy: 117.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 127.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P912231

CATALOG NUMBER: DFN2DIP-SQ4F0-090D060US850-RLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P912231

CATALOG NUMBER: DFN2DIP-SQ4F0-090D060US850-RLLONL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20
RC	80					70					50					30					0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10
RCR																					
0	109	109	109	109		101	101	101	101		87	87	87		74	74	74		62	62	62
1	100	96	92	88		93	89	86	83		77	75	72		66	64	63		56	54	53
2	91	84	78	73		85	79	73	69		68	64	61		58	56	53		50	48	46
3	84	74	67	62		78	70	63	58		61	56	52		52	49	46		44	42	40
4	77	66	59	53		71	62	55	50		54	49	45		47	43	40		40	37	35
5	71	59	51	46		66	56	49	43		49	43	39		42	38	35		36	33	31
6	65	54	46	40		61	50	43	38		44	39	34		39	34	31		33	30	27
7	61	49	41	35		56	46	39	34		40	35	30		35	31	27		30	27	24
8	56	44	37	31		52	42	35	30		37	31	27		32	28	25		28	25	22
9	53	41	33	28		49	38	32	27		34	28	25		30	25	22		26	23	20
10	49	37	30	25		46	35	29	24		31	26	22		28	23	20		24	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2894	2894	2894
5°	2899	2849	2868
10°	2870	2794	2775
15°	2831	2702	2632
20°	2779	2575	2455
25°	2725	2433	2285
30°	2653	2287	2069
35°	2583	2130	1879
40°	2511	1968	1661
45°	2428	1788	1463
50°	2341	1606	1270
55°	2251	1411	1084
60°	2147	1208	893
65°	2027	1001	805
70°	1882	808	730
75°	1700	714	666
80°	1436	600	580
85°	1000	404	442

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2428 cd/sqm

TEST NUMBER: P912231

CATALOG NUMBER: DFN2DIP-SQ4F0-090D060US850-RLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	386.6	2.6
10°-20°	1061.3	7.0
20°-30°	1490.1	9.9
30°-40°	1624.3	10.8
40°-50°	1492.9	9.9
50°-60°	1172.4	7.8
60°-70°	763.1	5.1
70°-80°	392.8	2.6
80°-90°	104.3	0.7
90°-100°	74.1	0.5
100°-110°	276.0	1.8
110°-120°	732.1	4.9
120°-130°	1214.2	8.1
130°-140°	1289.8	8.6
140°-150°	1198.7	8.0
150°-160°	963.8	6.4
160°-170°	621.0	4.1
170°-180°	213.7	1.4
0°-30°	2938.0	19.5
0°-40°	4562.3	30.3
0°-60°	7227.6	48.0
0°-90°	8487.8	56.3
90°-120°	1082.2	7.2
90°-150°	4785.0	31.7
90°-180°	6583.0	43.7
0°-180°	15071.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4125	4125	4125	4125	4125	
5°	4125	4106	4058	4091	4080	391
15°	3924	3882	3756	3685	3648	1106
25°	3562	3442	3196	3043	2986	1638
35°	3069	2878	2550	2315	2232	1921
45°	2509	2258	1867	1601	1512	1937
55°	1908	1616	1213	989	918	1705
65°	1288	986	650	523	511	1277
75°	687	425	299	272	269	726
85°	160	82	71	71	71	184
90°	2	20	32	41	44	14
95°	106	52	63	72	70	125
105°	494	543	99	117	124	528
115°	934	962	1003	250	133	920
125°	1321	1342	1373	1384	1389	1178
135°	1635	1661	1675	1692	1688	1263
145°	1896	1895	1922	1934	1926	1186
155°	2088	2074	2093	2103	2090	962
165°	2200	2190	2195	2207	2195	622
175°	2250	2239	2242	2254	2238	214
180°	2246	2246	2246	2246	2246	

TEST NUMBER: P912231

CATALOG NUMBER: DFN2DIP-SQ4F0-090D060US850-RLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4125.1	4125.1	4125.1	4125.1	4125.1
2.5°	4143.8	4125.1	4083.9	4121.6	4114.1
5°	4125.1	4106.5	4057.8	4091.4	4080.3
7.5°	4091.4	4069.3	4017.0	4031.7	4013.0
10°	4046.7	4020.6	3946.2	3934.6	3912.4
12.5°	3990.8	3957.2	3856.2	3834.0	3792.8
15°	3923.5	3882.4	3755.6	3684.7	3647.5
17.5°	3845.1	3785.3	3628.4	3546.5	3486.7
20°	3755.6	3680.8	3494.1	3401.1	3318.7
22.5°	3658.6	3572.6	3355.9	3229.2	3173.4
25°	3561.6	3441.9	3195.6	3042.7	2986.4
27.5°	3445.9	3318.7	3046.2	2870.8	2784.8
30°	3322.7	3180.5	2881.8	2691.8	2590.7
32.5°	3203.0	3031.1	2725.4	2501.2	2407.7
35°	3068.8	2878.3	2549.9	2314.7	2232.3
37.5°	2938.1	2732.6	2385.6	2127.7	2034.7
40°	2799.9	2576.1	2213.7	1948.7	1851.7
42.5°	2658.1	2419.3	2042.1	1765.7	1672.6
45°	2508.8	2258.5	1866.7	1601.3	1511.8
47.5°	2366.9	2102.0	1698.8	1433.4	1351.4
50°	2210.1	1945.1	1534.4	1276.6	1198.5
52.5°	2056.9	1776.8	1377.6	1131.2	1060.3
55°	1907.5	1616.4	1213.1	989.4	918.5
57.5°	1754.7	1456.0	1067.9	858.7	798.9
60°	1597.7	1299.1	914.6	724.4	664.6
62.5°	1444.9	1146.3	783.8	604.8	575.1
65°	1288.0	985.5	649.5	522.8	511.4
67.5°	1138.7	836.1	522.8	459.0	447.9
70°	981.9	690.8	433.0	395.7	380.6
72.5°	832.5	556.1	362.0	332.3	324.8
75°	686.8	425.4	298.7	272.5	268.9
77.5°	541.4	302.2	235.2	220.2	212.7
80°	406.8	216.7	179.0	164.4	164.4
82.5°	283.6	145.7	123.2	115.7	115.7
85°	160.4	82.0	70.9	70.9	70.9
87.5°	59.8	29.7	29.7	26.2	26.2
90°	1.6	19.5	32.4	40.7	43.8
92.5°	40.7	34.2	38.9	42.3	43.8
95°	105.6	51.9	63.3	71.6	69.9
97.5°	190.1	56.9	82.7	87.8	89.4
100°	287.7	65.0	92.6	105.6	108.8
102.5°	394.8	391.7	95.9	113.7	118.7
105°	493.9	542.7	99.1	116.9	123.5
107.5°	609.4	649.9	102.5	120.2	126.8
110°	720.0	753.9	284.5	122.0	128.3



TEST NUMBER: P912231

CATALOG NUMBER: DFN2DIP-SQ4F0-090D060US850-RLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	823.9	853.0	825.4	125.0	130.1
115°	934.3	961.9	1002.6	250.3	133.3
117.5°	1030.2	1062.6	1090.4	857.9	432.2
120°	1137.5	1161.8	1191.2	1210.6	991.2
122.5°	1228.3	1254.4	1287.0	1296.6	1298.4
125°	1321.0	1342.2	1373.1	1384.5	1389.2
127.5°	1405.5	1428.3	1452.8	1469.0	1470.5
130°	1485.2	1511.2	1529.0	1546.9	1545.4
132.5°	1566.5	1587.6	1605.4	1620.0	1618.5
135°	1634.8	1660.8	1675.3	1691.7	1688.3
137.5°	1706.1	1725.6	1742.0	1758.2	1753.4
140°	1776.0	1789.1	1806.9	1821.5	1813.4
142.5°	1834.6	1846.0	1867.1	1880.0	1871.9
145°	1896.4	1894.6	1922.2	1933.7	1925.6
147.5°	1949.8	1945.0	1972.6	1980.7	1974.4
150°	2002.0	1990.5	2016.6	2026.3	2018.2
152.5°	2045.8	2032.8	2057.1	2067.0	2055.5
155°	2088.0	2073.5	2093.0	2102.7	2089.7
157.5°	2122.2	2109.2	2123.8	2135.3	2122.2
160°	2151.5	2141.6	2151.5	2161.1	2149.8
162.5°	2177.3	2167.7	2175.7	2187.2	2172.5
165°	2200.1	2190.5	2195.3	2206.7	2195.3
167.5°	2218.0	2208.2	2213.2	2224.7	2209.9
170°	2232.7	2222.9	2226.2	2237.5	2222.9
172.5°	2242.4	2232.7	2236.0	2247.4	2232.7
175°	2250.5	2239.1	2242.4	2253.7	2237.5
177.5°	2253.7	2242.4	2244.1	2255.5	2240.8
180°	2245.6	2245.6	2245.6	2245.6	2245.6

TEST NUMBER: P912231

CATALOG NUMBER: DFN2DIP-SQ4F0-090D060US850-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	11.42	12.31	12.33	13.23	14.41	7.38	8.27	8.29	9.19	10.37
	3H	13.11	13.90	14.03	14.83	16.04	8.58	9.37	9.50	10.30	11.51
	4H	13.72	14.47	14.66	15.41	16.62	9.03	9.78	9.97	10.71	11.93
	6H	14.15	14.84	15.10	15.78	17.01	9.35	10.04	10.30	10.98	12.21
	8H	14.28	14.94	15.23	15.89	17.12	9.45	10.10	10.40	11.06	12.29
	12H	14.35	14.97	15.31	15.92	17.17	9.49	10.12	10.45	11.07	12.32
4H	2H	11.45	12.19	12.39	13.13	14.35	7.99	8.73	8.93	9.67	10.89
	3H	13.29	13.91	14.24	14.87	16.10	9.34	9.96	10.29	10.93	12.16
	4H	13.98	14.55	14.94	15.51	16.77	9.89	10.46	10.85	11.42	12.68
	6H	14.51	14.99	15.48	15.98	17.23	10.32	10.80	11.29	11.79	13.04
	8H	14.69	15.14	15.66	16.12	17.39	10.45	10.90	11.42	11.88	13.15
	12H	14.79	15.20	15.78	16.19	17.46	10.52	10.93	11.51	11.92	13.19
8H	4H	13.96	14.41	14.93	15.39	16.66	10.18	10.64	11.16	11.61	12.88
	6H	14.53	14.90	15.53	15.93	17.19	10.70	11.08	11.70	12.10	13.36
	8H	14.75	15.08	15.76	16.09	17.37	10.90	11.23	11.90	12.24	13.52
	12H	14.89	15.18	15.90	16.19	17.52	11.02	11.31	12.03	12.31	13.64
12H	4H	13.91	14.32	14.90	15.32	16.59	10.19	10.60	11.18	11.59	12.87
	6H	14.50	14.84	15.51	15.84	17.13	10.75	11.09	11.76	12.09	13.38
	8H	14.73	15.02	15.74	16.02	17.35	10.97	11.26	11.98	12.26	13.59