

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: P914989

Luminaire Tested: DFN2DIP-SQ4F0-090D160US927-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P914989
REPORT IS A COMBINATION OF REPORTS P901729 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D160US927-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

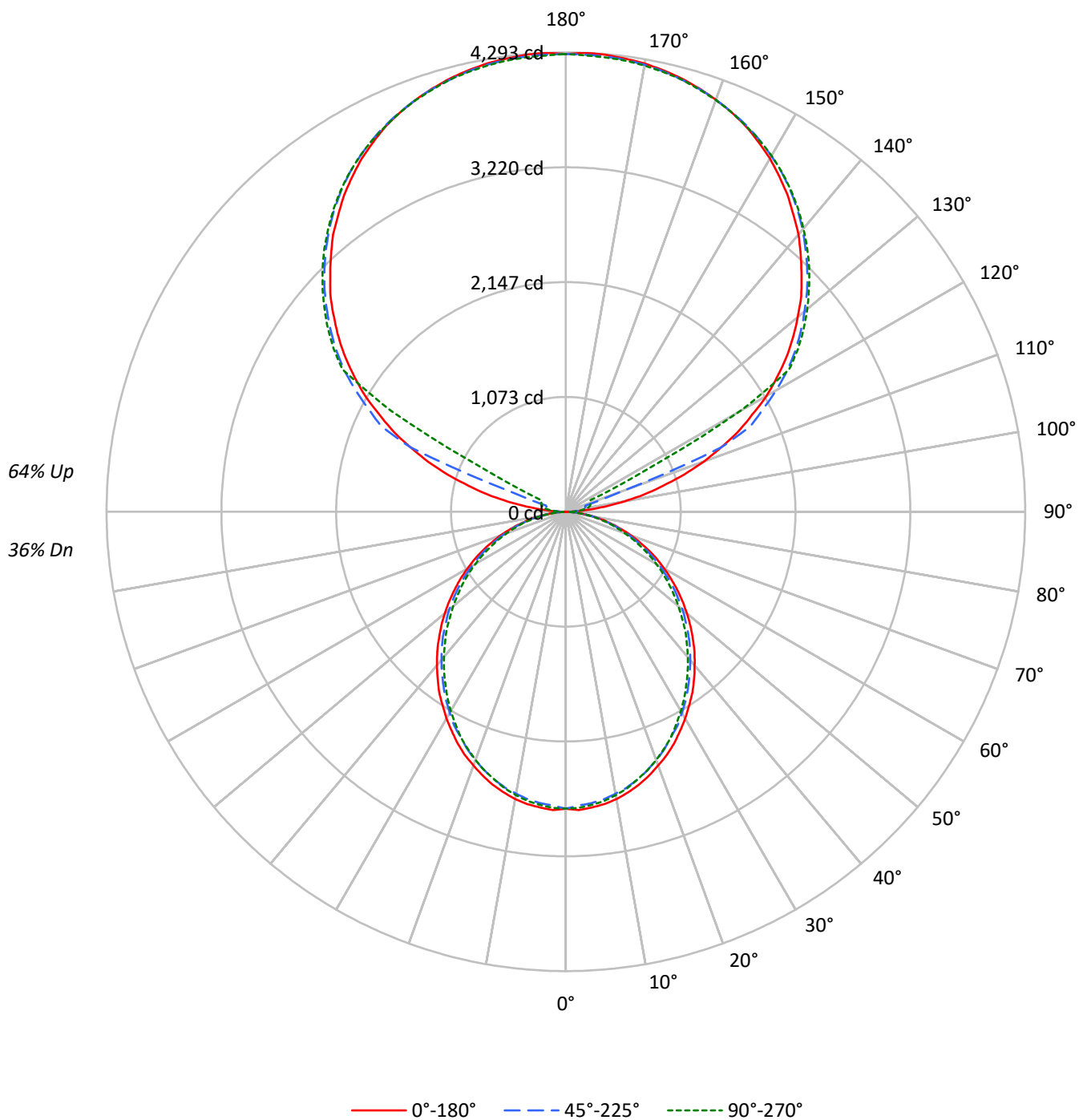
Lumens per Lamp: N/A
Luminaire Lumens: 19606.5 lumens
Efficiency: N/A
Efficacy: 95.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 204.8
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: P914989

CATALOG NUMBER: DFN2DIP-SQ4F0-090D160US927-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P914989

CATALOG NUMBER: DFN2DIP-SQ4F0-090D160US927-FLLONL

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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	43	43	43
1	95	90	87	83	86	82	79	76	66	64	62	52	50	49	38	37	37
2	86	79	73	68	78	72	67	62	58	54	51	45	43	41	34	32	31
3	79	69	62	57	71	63	57	52	51	47	43	40	37	34	30	28	26
4	72	61	54	48	65	56	49	44	45	40	37	36	32	29	27	24	23
5	66	55	47	41	59	50	43	38	40	35	31	32	28	25	24	22	20
6	61	49	41	35	55	45	38	33	36	31	27	29	25	22	22	19	17
7	56	44	36	31	51	40	33	29	33	28	24	26	22	20	20	17	15
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	16	14
9	48	36	29	24	44	33	27	22	27	22	19	22	18	16	17	14	12
10	45	33	26	21	41	30	24	20	25	20	17	20	17	14	16	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1947	1947	1947
5°	1950	1920	1933
10°	1934	1894	1907
15°	1905	1864	1867
20°	1867	1821	1826
25°	1829	1769	1778
30°	1781	1721	1717
35°	1735	1665	1652
40°	1679	1608	1591
45°	1624	1551	1528
50°	1563	1491	1455
55°	1499	1421	1389
60°	1427	1339	1312
65°	1348	1254	1222
70°	1248	1150	1125
75°	1109	1026	1037
80°	942	867	866
85°	681	594	582

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2292 cd/sqm

TEST NUMBER: P914989

CATALOG NUMBER: DFN2DIP-SQ4F0-090D160US927-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	261.1	1.3
10°-20°	734.7	3.7
20°-30°	1079.6	5.5
30°-40°	1253.9	6.4
40°-50°	1252.4	6.4
50°-60°	1092.1	5.6
60°-70°	807.3	4.1
70°-80°	456.7	2.3
80°-90°	128.1	0.7
90°-100°	141.0	0.7
100°-110°	525.8	2.7
110°-120°	1394.6	7.1
120°-130°	2313.0	11.8
130°-140°	2456.9	12.5
140°-150°	2283.4	11.6
150°-160°	1835.8	9.4
160°-170°	1182.9	6.0
170°-180°	407.2	2.1
0°-30°	2075.4	10.6
0°-40°	3329.4	17.0
0°-60°	5673.8	28.9
0°-90°	7065.9	36.0
90°-120°	2061.4	10.5
90°-150°	9114.7	46.5
90°-180°	12541.0	64.0
0°-180°	19606.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2774	2774	2774	2774	2774	
5°	2774	2764	2734	2756	2750	263
15°	2641	2625	2590	2601	2588	744
25°	2390	2369	2324	2329	2324	1100
35°	2062	2036	1993	1977	1963	1288
45°	1678	1659	1619	1590	1579	1295
55°	1270	1254	1222	1190	1176	1135
65°	856	840	814	790	776	847
75°	448	443	429	414	419	478
85°	109	107	104	96	93	122
90°	3	37	62	78	83	18
95°	201	99	121	136	133	238
105°	941	1034	189	223	235	1005
115°	1780	1832	1910	477	254	1752
125°	2516	2557	2616	2637	2646	2244
135°	3114	3164	3191	3222	3216	2405
145°	3612	3609	3662	3683	3668	2259
155°	3977	3950	3987	4005	3981	1833
165°	4191	4172	4182	4203	4182	1184
175°	4287	4265	4271	4293	4262	408
180°	4278	4278	4278	4278	4278	

TEST NUMBER: P914989

CATALOG NUMBER: DFN2DIP-SQ4F0-090D160US927-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2774.1	2774.1	2774.1	2774.1	2774.1
2.5°	2790.3	2777.0	2747.6	2774.1	2769.1
5°	2774.1	2763.7	2734.3	2755.5	2750.4
7.5°	2755.5	2739.7	2710.2	2731.8	2726.4
10°	2726.4	2707.7	2675.7	2696.9	2689.0
12.5°	2686.1	2670.3	2638.4	2651.6	2646.3
15°	2640.9	2625.1	2590.2	2601.0	2587.7
17.5°	2584.8	2569.0	2534.2	2547.5	2534.2
20°	2523.4	2507.6	2470.2	2478.1	2467.6
22.5°	2462.3	2438.3	2403.4	2403.4	2398.0
25°	2390.1	2368.9	2323.6	2328.7	2323.6
27.5°	2310.0	2291.3	2256.8	2248.9	2235.6
30°	2230.2	2208.7	2168.8	2160.8	2150.1
32.5°	2144.8	2128.9	2086.1	2070.0	2059.3
35°	2062.1	2035.5	1992.7	1976.7	1963.3
37.5°	1968.7	1944.6	1901.9	1883.3	1869.9
40°	1872.7	1851.2	1808.5	1784.7	1774.0
42.5°	1779.3	1757.8	1715.4	1688.5	1672.7
45°	1678.0	1659.4	1619.1	1590.0	1579.3
47.5°	1579.3	1560.6	1517.8	1488.4	1472.6
50°	1475.1	1461.8	1424.4	1387.1	1373.8
52.5°	1373.8	1355.1	1320.6	1291.2	1272.5
55°	1269.9	1253.8	1221.8	1189.9	1176.5
57.5°	1165.8	1152.5	1117.7	1085.7	1074.9
60°	1061.6	1051.1	1013.8	984.4	976.4
62.5°	960.3	941.6	915.0	888.4	877.7
65°	856.4	840.3	813.6	789.6	776.3
67.5°	749.7	736.2	712.3	693.7	682.9
70°	650.9	640.2	616.2	597.5	587.0
72.5°	549.6	538.8	525.5	506.9	499.0
75°	448.1	442.9	429.4	413.5	418.9
77.5°	357.4	346.7	341.4	333.4	325.5
80°	266.9	264.0	258.6	250.7	245.4
82.5°	181.4	181.4	178.9	168.1	168.1
85°	109.2	106.7	104.2	95.9	93.4
87.5°	48.1	42.7	37.4	29.5	26.6
90°	2.9	37.2	61.7	77.6	83.4
92.5°	77.6	65.0	74.2	80.5	83.4
95°	201.1	98.9	120.6	136.3	133.1
97.5°	362.0	108.4	157.6	167.2	170.2
100°	548.0	123.9	176.4	201.1	207.3
102.5°	752.0	746.2	182.7	216.5	226.0
105°	941.0	1034.0	188.9	222.8	235.2
107.5°	1160.7	1237.9	195.2	229.0	241.5
110°	1371.3	1436.1	541.8	232.3	244.4

TEST NUMBER: P914989

CATALOG NUMBER: DFN2DIP-SQ4F0-090D160US927-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1569.5	1625.0	1572.4	238.2	247.7
115°	1779.7	1832.2	1909.8	476.7	254.0
117.5°	1962.4	2024.1	2077.1	1634.2	823.3
120°	2166.8	2213.0	2268.9	2306.0	1888.2
122.5°	2339.9	2389.5	2451.6	2469.9	2473.3
125°	2516.3	2556.7	2615.5	2637.3	2646.4
127.5°	2677.3	2720.7	2767.3	2798.2	2801.2
130°	2829.1	2878.7	2912.5	2946.7	2943.7
132.5°	2983.8	3024.2	3058.1	3086.0	3083.1
135°	3113.9	3163.6	3191.1	3222.4	3216.1
137.5°	3249.9	3287.1	3318.3	3349.2	3340.0
140°	3383.0	3408.0	3441.8	3469.8	3454.3
142.5°	3494.7	3516.4	3556.5	3581.1	3565.7
145°	3612.3	3609.0	3661.6	3683.2	3667.9
147.5°	3714.1	3705.0	3757.6	3773.0	3760.8
150°	3813.4	3791.7	3841.4	3859.7	3844.3
152.5°	3896.8	3872.2	3918.5	3937.3	3915.6
155°	3977.3	3949.7	3986.9	4005.3	3980.6
157.5°	4042.4	4017.8	4045.7	4067.4	4042.4
160°	4098.3	4079.5	4098.3	4116.6	4094.9
162.5°	4147.5	4129.2	4144.5	4166.2	4138.4
165°	4190.9	4172.5	4181.7	4203.4	4181.7
167.5°	4225.1	4206.3	4215.9	4237.5	4209.7
170°	4253.0	4234.3	4240.5	4262.2	4234.3
172.5°	4271.4	4253.0	4259.2	4280.9	4253.0
175°	4286.8	4265.1	4271.4	4293.1	4262.2
177.5°	4293.1	4271.4	4274.7	4296.4	4268.4
180°	4277.6	4277.6	4277.6	4277.6	4277.6

TEST NUMBER: P914989

CATALOG NUMBER: DFN2DIP-SQ4F0-090D160US927-FLLONL

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	8.15	8.90	9.22	9.97	11.43	7.71	8.45	8.77	9.52	10.98
	3H	9.81	10.48	10.88	11.56	13.03	9.32	9.99	10.39	11.06	12.54
	4H	10.39	11.03	11.48	12.11	13.59	9.90	10.53	10.99	11.61	13.10
	6H	10.79	11.37	11.89	12.46	13.95	10.29	10.87	11.39	11.96	13.45
	8H	10.89	11.45	11.99	12.55	14.04	10.39	10.95	11.49	12.05	13.53
	12H	10.94	11.47	12.04	12.56	14.07	10.43	10.96	11.53	12.05	13.56
4H	2H	8.60	9.23	9.69	10.31	11.80	8.24	8.88	9.34	9.96	11.44
	3H	10.46	10.99	11.56	12.10	13.59	10.05	10.58	11.15	11.69	13.18
	4H	11.17	11.66	12.28	12.76	14.27	10.75	11.23	11.85	12.33	13.85
	6H	11.68	12.10	12.80	13.22	14.73	11.25	11.67	12.37	12.79	14.30
	8H	11.83	12.22	12.95	13.34	14.86	11.40	11.79	12.51	12.90	14.42
	12H	11.90	12.26	13.03	13.38	14.91	11.45	11.81	12.58	12.93	14.46
8H	4H	11.36	11.75	12.47	12.86	14.39	10.98	11.37	12.10	12.48	14.01
	6H	11.99	12.31	13.13	13.47	14.99	11.61	11.93	12.74	13.08	14.60
	8H	12.21	12.49	13.35	13.63	15.17	11.82	12.10	12.96	13.24	14.78
	12H	12.34	12.59	13.49	13.72	15.30	11.93	12.18	13.08	13.31	14.89
12H	4H	11.34	11.69	12.47	12.82	14.35	10.97	11.32	12.10	12.45	13.98
	6H	12.02	12.30	13.16	13.44	14.98	11.65	11.93	12.79	13.06	14.61
	8H	12.26	12.51	13.40	13.64	15.22	11.88	12.13	13.02	13.26	14.84