

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: P910591

Luminaire Tested: DFN2DIP-4P4F0-080D060US850-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P910591
REPORT IS A COMBINATION OF REPORTS P900645 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-080D060US850-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

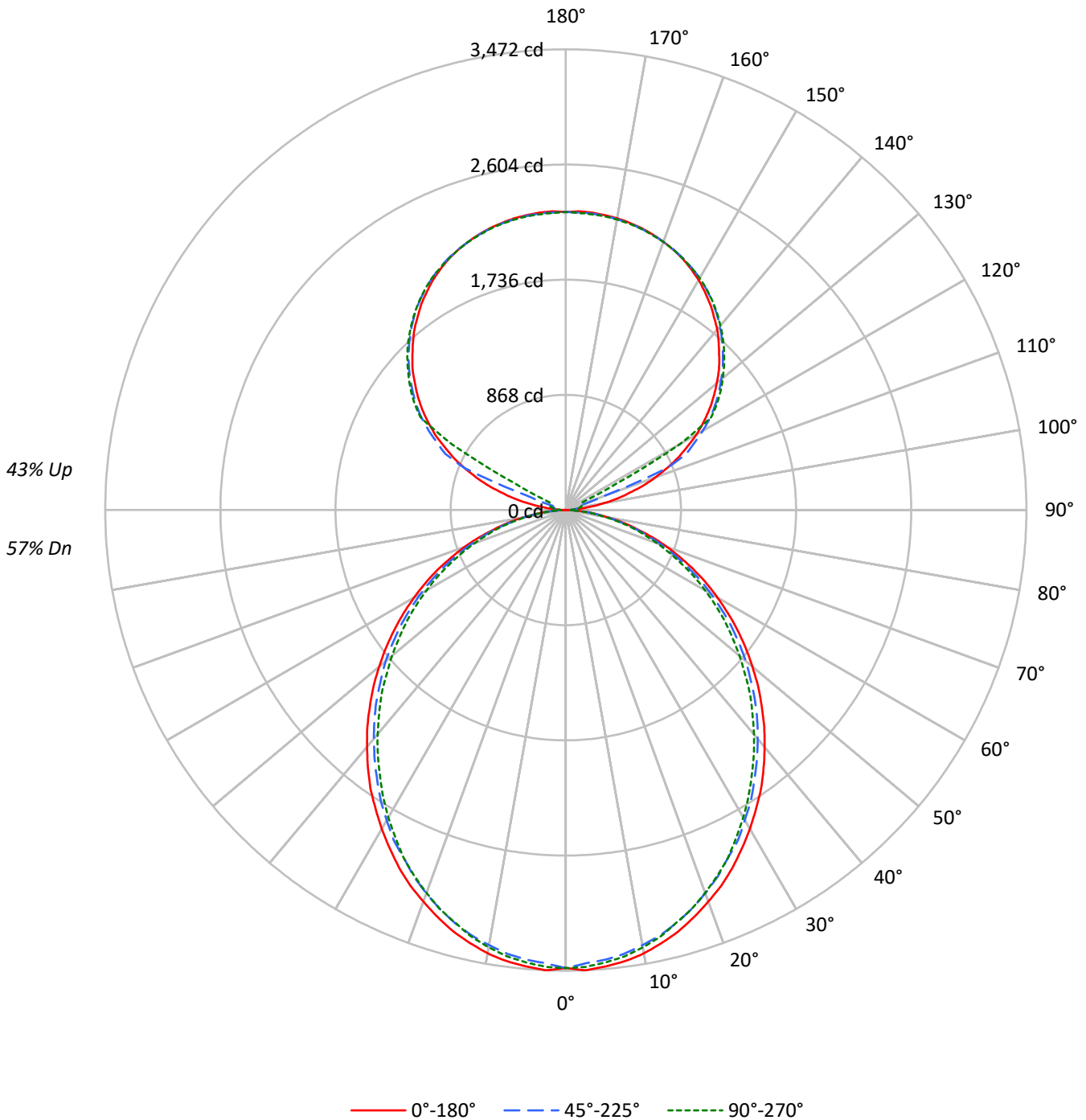
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 15370.7 lumens
Efficiency: N/A
Efficacy: 112.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 136.1
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: P910591
CATALOG NUMBER: DFN2DIP-4P4F0-080D060US850-FLLONL

Luminous Intensity Polar Plot





TEST NUMBER: P910591
 CATALOG NUMBER: DFN2DIP-4P4F0-080D060US850-FLLONL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	0
RCR																		
0	109	109	109	109	101	101	101	101	87	87	87	74	74	74	63	63	63	57
1	99	95	91	88	92	89	85	82	77	74	72	66	64	62	55	54	53	48
2	91	83	77	72	84	77	72	67	67	63	59	58	55	52	49	47	45	40
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	43	40	38	34
4	76	65	57	50	70	61	53	48	53	47	43	45	41	38	39	35	33	29
5	69	58	49	43	64	54	47	41	47	41	37	41	36	33	35	31	29	26
6	64	52	44	38	59	49	41	36	43	37	32	37	32	29	32	28	25	22
7	59	47	39	33	55	44	37	32	39	33	28	34	29	25	29	25	22	20
8	55	43	35	29	51	40	33	28	35	29	25	31	26	23	27	23	20	18
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	25	21	18	16
10	48	36	28	24	45	34	27	22	30	24	20	26	22	18	23	19	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2240	2240	2240
5°	2243	2209	2224
10°	2225	2180	2195
15°	2193	2145	2149
20°	2149	2096	2101
25°	2105	2037	2046
30°	2050	1982	1976
35°	1998	1917	1902
40°	1934	1852	1832
45°	1870	1786	1760
50°	1800	1718	1676
55°	1727	1638	1600
60°	1644	1544	1512
65°	1554	1447	1409
70°	1439	1328	1298
75°	1280	1186	1197
80°	1089	1005	1001
85°	790	691	675

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1870 cd/sqm



TEST NUMBER: P910591

CATALOG NUMBER: DFN2DIP-4P4F0-080D060US850-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	324.9	2.1
10°-20°	914.2	5.9
20°-30°	1343.5	8.7
30°-40°	1560.4	10.2
40°-50°	1558.4	10.1
50°-60°	1358.9	8.8
60°-70°	1004.5	6.5
70°-80°	568.4	3.7
80°-90°	154.0	1.0
90°-100°	74.1	0.5
100°-110°	276.0	1.8
110°-120°	732.1	4.8
120°-130°	1214.2	7.9
130°-140°	1289.8	8.4
140°-150°	1198.7	7.8
150°-160°	963.8	6.3
160°-170°	621.0	4.0
170°-180°	213.7	1.4
0°-30°	2582.6	16.8
0°-40°	4143.0	27.0
0°-60°	7060.4	45.9
0°-90°	8787.2	57.2
90°-120°	1082.2	7.0
90°-150°	4785.0	31.1
90°-180°	6583.0	42.8
0°-180°	15370.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3452	3452	3452	3452	3452	
5°	3452	3439	3402	3429	3423	328
15°	3286	3267	3223	3237	3220	926
25°	2974	2948	2892	2898	2892	1369
35°	2566	2533	2480	2460	2443	1602
45°	2088	2065	2015	1979	1965	1612
55°	1580	1560	1520	1481	1464	1413
65°	1066	1046	1012	983	966	1054
75°	558	551	534	515	521	595
85°	136	133	130	119	116	152
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: P910591

CATALOG NUMBER: DFN2DIP-4P4F0-080D060US850-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3452.1	3452.1	3452.1	3452.1	3452.1
2.5°	3472.2	3455.6	3419.0	3452.1	3445.8
5°	3452.1	3439.1	3402.5	3428.9	3422.6
7.5°	3428.9	3409.2	3372.6	3399.3	3392.7
10°	3392.7	3369.4	3329.6	3355.9	3346.2
12.5°	3342.6	3322.9	3283.1	3299.6	3293.0
15°	3286.3	3266.6	3223.2	3236.6	3220.1
17.5°	3216.5	3196.8	3153.4	3170.1	3153.4
20°	3140.1	3120.4	3073.9	3083.8	3070.7
22.5°	3064.1	3034.1	2990.8	2990.8	2984.1
25°	2974.2	2947.8	2891.5	2897.8	2891.5
27.5°	2874.5	2851.3	2808.3	2798.5	2781.9
30°	2775.3	2748.4	2698.9	2689.0	2675.6
32.5°	2668.9	2649.2	2595.9	2575.9	2562.6
35°	2566.0	2533.0	2479.7	2459.7	2443.1
37.5°	2449.8	2419.8	2366.7	2343.4	2326.9
40°	2330.5	2303.6	2250.5	2220.9	2207.5
42.5°	2214.2	2187.4	2134.6	2101.1	2081.5
45°	2088.1	2064.8	2014.8	1978.6	1965.3
47.5°	1965.3	1942.0	1888.7	1852.1	1832.4
50°	1835.6	1819.1	1772.5	1726.0	1709.5
52.5°	1709.5	1686.2	1643.3	1606.7	1583.4
55°	1580.2	1560.1	1520.4	1480.6	1464.0
57.5°	1450.7	1434.2	1390.8	1351.0	1337.6
60°	1321.0	1308.1	1261.5	1224.9	1215.0
62.5°	1194.9	1171.8	1138.6	1105.6	1092.1
65°	1065.7	1045.7	1012.5	982.6	966.0
67.5°	932.9	916.0	886.4	863.2	849.8
70°	810.0	796.6	766.8	743.5	730.4
72.5°	683.9	670.6	654.0	630.8	620.9
75°	557.5	551.2	534.3	514.6	521.2
77.5°	444.8	431.4	424.7	414.9	405.0
80°	332.1	328.6	321.9	312.1	305.3
82.5°	225.8	225.8	222.6	209.2	209.2
85°	136.0	132.7	129.6	119.4	116.2
87.5°	59.9	53.2	46.5	36.6	33.2
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: P910591

CATALOG NUMBER: DFN2DIP-4P4F0-080D060US850-FLLONL

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: P910591
 CATALOG NUMBER: DFN2DIP-4P4F0-080D060US850-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	10.73	11.66	11.62	12.57	13.74	10.28	11.21	11.18	12.13	13.29
	3H	12.40	13.23	13.31	14.16	15.35	11.91	12.74	12.81	13.67	14.86
	4H	12.99	13.78	13.91	14.71	15.91	12.50	13.29	13.42	14.22	15.42
	6H	13.40	14.13	14.33	15.06	16.28	12.90	13.63	13.83	14.56	15.78
	8H	13.51	14.20	14.45	15.16	16.37	13.01	13.70	13.95	14.65	15.86
	12H	13.56	14.22	14.51	15.17	16.41	13.05	13.71	14.00	14.66	15.90
4H	2H	11.20	11.99	12.13	12.92	14.12	10.84	11.63	11.77	12.56	13.76
	3H	13.08	13.74	14.01	14.69	15.91	12.67	13.33	13.61	14.29	15.50
	4H	13.80	14.40	14.75	15.35	16.59	13.38	13.98	14.32	14.93	16.17
	6H	14.32	14.84	15.28	15.82	17.06	13.89	14.41	14.85	15.39	16.63
	8H	14.48	14.96	15.44	15.93	17.19	14.04	14.53	15.00	15.50	16.75
	12H	14.56	14.99	15.54	15.98	17.24	14.11	14.55	15.09	15.53	16.79
8H	4H	14.00	14.49	14.96	15.46	16.71	13.63	14.11	14.59	15.08	16.33
	6H	14.64	15.04	15.63	16.06	17.31	14.26	14.66	15.25	15.67	16.92
	8H	14.87	15.22	15.86	16.22	17.49	14.48	14.83	15.47	15.83	17.10
	12H	15.01	15.32	16.01	16.31	17.63	14.60	14.91	15.60	15.90	17.22
12H	4H	13.99	14.43	14.97	15.42	16.67	13.62	14.06	14.60	15.05	16.31
	6H	14.67	15.03	15.67	16.03	17.30	14.30	14.66	15.30	15.66	16.93
	8H	14.92	15.24	15.92	16.23	17.55	14.54	14.86	15.54	15.85	17.17