

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: P923109

Luminaire Tested: DFN2DIP-SQ4F0-080D070US940-FLLONL

Issue Date: 11/21/2024

**Test Information**

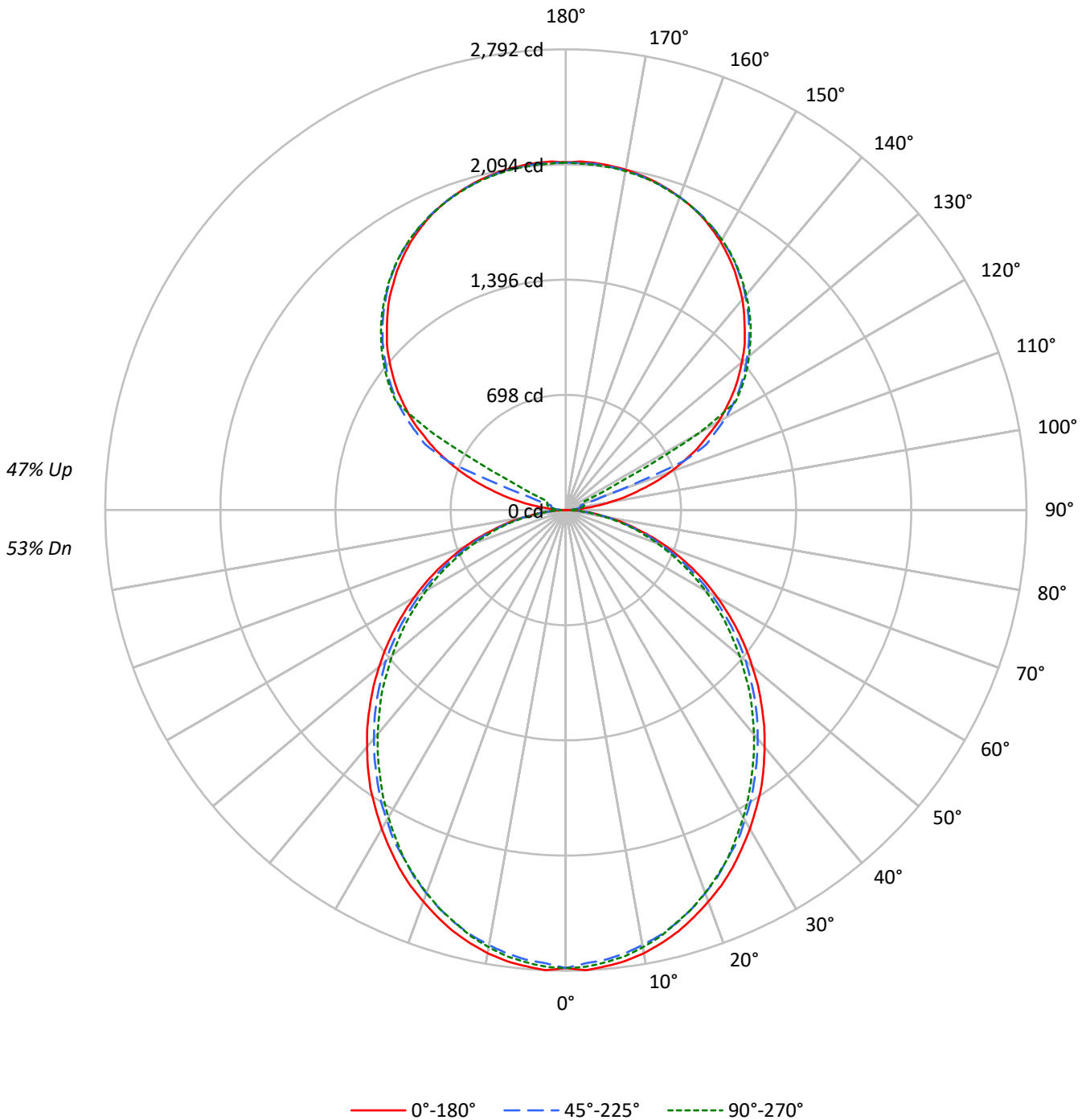
Test Method: LM-79-2019  
Report Number: P923109  
REPORT IS A COMBINATION OF REPORTS P901601 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-080D070US940-FLLONL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13241.9 lumens  
Efficiency: N/A  
Efficacy: 107.1 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: General Diffuse  
  
Input Watts (W): 123.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P923109  
CATALOG NUMBER: DFN2DIP-SQ4F0-080D070US940-FLLONL

### Luminous Intensity Polar Plot





TEST NUMBER: P923109

CATALOG NUMBER: DFN2DIP-SQ4F0-080D070US940-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	50	30	10	0
RCR																					
0	108	108	108	108	100	100	100	100	85	85	85	72	72	72	59	59	59	59	59	59	53
1	99	94	90	87	91	87	84	81	75	72	70	63	61	60	52	51	50	50	50	50	45
2	90	82	76	71	83	76	71	66	65	61	58	55	52	50	46	44	42	42	42	42	38
3	82	72	65	59	76	67	61	56	58	53	49	49	45	42	41	38	36	36	36	36	32
4	75	64	56	50	69	60	53	47	51	46	42	44	40	36	37	33	31	31	31	31	27
5	69	57	49	43	63	53	46	41	46	40	36	39	35	31	33	30	27	27	27	27	24
6	63	51	43	37	59	48	41	35	41	36	31	35	31	28	30	26	24	24	24	24	21
7	59	46	38	33	54	43	36	31	38	32	28	32	28	24	27	24	21	21	21	21	19
8	54	42	34	29	50	39	32	27	34	29	25	30	25	22	25	22	19	19	19	19	17
9	51	38	31	26	47	36	29	25	31	26	22	27	23	20	23	20	17	17	17	17	15
10	47	35	28	23	44	33	26	22	29	24	20	25	21	18	21	18	16	16	16	16	14

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	1948	1948	1948
5°	1951	1921	1934
10°	1935	1895	1908
15°	1906	1865	1868
20°	1868	1822	1827
25°	1830	1770	1779
30°	1782	1722	1718
35°	1736	1666	1653
40°	1680	1609	1592
45°	1625	1552	1529
50°	1564	1492	1456
55°	1500	1422	1389
60°	1428	1340	1313
65°	1349	1255	1223
70°	1249	1151	1126
75°	1110	1026	1037
80°	943	868	867
85°	681	594	583

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1625 cd/sqm



TEST NUMBER: P923109

CATALOG NUMBER: DFN2DIP-SQ4F0-080D070US940-FLONL

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	261.3	2.0
10°-20°	735.1	5.6
20°-30°	1080.3	8.2
30°-40°	1254.7	9.5
40°-50°	1253.1	9.5
50°-60°	1092.7	8.3
60°-70°	807.7	6.1
70°-80°	457.0	3.5
80°-90°	124.3	0.9
90°-100°	69.5	0.5
100°-110°	259.0	2.0
110°-120°	686.8	5.2
120°-130°	1139.1	8.6
130°-140°	1209.9	9.1
140°-150°	1124.5	8.5
150°-160°	904.1	6.8
160°-170°	582.6	4.4
170°-180°	200.5	1.5
<hr/>		
0°-30°	2076.6	15.7
0°-40°	3331.3	25.2
0°-60°	5677.0	42.9
0°-90°	7066.1	53.4
90°-120°	1015.2	7.7
90°-150°	4488.7	33.9
90°-180°	6176.0	46.6
0°-180°	13241.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2776	2776	2776	2776	2776	
5°	2776	2765	2736	2757	2752	263
15°	2642	2626	2592	2602	2589	744
25°	2392	2370	2325	2330	2325	1100
35°	2063	2037	1994	1978	1964	1288
45°	1679	1660	1620	1591	1580	1296
55°	1271	1254	1222	1190	1177	1136
65°	857	841	814	790	777	847
75°	448	443	430	414	419	479
85°	109	107	104	96	94	122
90°	1	18	30	38	41	12
95°	99	49	59	67	66	117
105°	463	509	93	110	116	495
115°	876	902	940	235	125	863
125°	1239	1259	1288	1299	1303	1105
135°	1534	1558	1572	1587	1584	1185
145°	1779	1777	1803	1814	1806	1113
155°	1959	1945	1963	1972	1960	903
165°	2064	2055	2059	2070	2059	583
175°	2111	2100	2104	2114	2099	201
180°	2107	2107	2107	2107	2107	



TEST NUMBER: P923109

CATALOG NUMBER: DFN2DIP-SQ4F0-080D070US940-FLLONL

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2775.7	2775.7	2775.7	2775.7	2775.7
2.5°	2791.9	2778.6	2749.1	2775.7	2770.6
5°	2775.7	2765.3	2735.9	2757.1	2752.0
7.5°	2757.1	2741.2	2711.8	2733.3	2727.9
10°	2727.9	2709.2	2677.2	2698.4	2690.6
12.5°	2687.7	2671.8	2639.8	2653.1	2647.8
15°	2642.4	2626.5	2591.7	2602.5	2589.2
17.5°	2586.3	2570.4	2535.6	2549.0	2535.6
20°	2524.9	2509.0	2471.6	2479.6	2469.1
22.5°	2463.7	2439.6	2404.8	2404.8	2399.4
25°	2391.5	2370.3	2325.0	2330.0	2325.0
27.5°	2311.3	2292.7	2258.1	2250.1	2236.9
30°	2231.5	2209.9	2170.1	2162.1	2151.3
32.5°	2146.0	2130.1	2087.3	2071.2	2060.5
35°	2063.2	2036.7	1993.9	1977.7	1964.4
37.5°	1969.8	1945.7	1903.0	1884.3	1871.0
40°	1873.8	1852.3	1809.5	1785.7	1774.9
42.5°	1780.4	1758.8	1716.4	1689.4	1673.7
45°	1679.0	1660.3	1620.1	1590.9	1580.2
47.5°	1580.2	1561.5	1518.7	1489.2	1473.4
50°	1476.0	1462.7	1425.2	1387.9	1374.6
52.5°	1374.6	1355.8	1321.3	1291.9	1273.2
55°	1270.6	1254.5	1222.5	1190.5	1177.1
57.5°	1166.4	1153.2	1118.3	1086.3	1075.5
60°	1062.2	1051.8	1014.3	984.9	977.0
62.5°	960.8	942.2	915.5	888.9	878.2
65°	856.9	840.8	814.1	790.1	776.8
67.5°	750.1	736.6	712.7	694.1	683.3
70°	651.3	640.5	616.5	597.8	587.3
72.5°	549.9	539.2	525.8	507.2	499.3
75°	448.3	443.2	429.6	413.8	419.1
77.5°	357.7	346.9	341.5	333.6	325.7
80°	267.1	264.2	258.9	250.9	245.5
82.5°	181.6	181.6	179.0	168.2	168.2
85°	109.3	106.7	104.2	96.0	93.5
87.5°	48.2	42.8	37.4	29.4	26.7
90°	1.4	18.3	30.4	38.2	41.1
92.5°	38.2	32.0	36.6	39.7	41.1
95°	99.0	48.7	59.4	67.1	65.5
97.5°	178.3	53.4	77.7	82.4	83.8
100°	269.9	61.0	86.9	99.0	102.1
102.5°	370.3	367.5	90.0	106.6	111.3
105°	463.4	509.2	93.0	109.7	115.8
107.5°	571.6	609.7	96.1	112.8	119.0
110°	675.4	707.2	266.8	114.4	120.4



TEST NUMBER: P923109

CATALOG NUMBER: DFN2DIP-SQ4F0-080D070US940-FLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	772.9	800.2	774.4	117.3	122.0
115°	876.5	902.3	940.5	234.8	125.1
117.5°	966.4	996.8	1022.9	804.8	405.5
120°	1067.0	1089.8	1117.4	1135.7	929.9
122.5°	1152.3	1176.7	1207.4	1216.4	1218.0
125°	1239.2	1259.1	1288.1	1298.8	1303.2
127.5°	1318.5	1339.8	1362.8	1378.0	1379.5
130°	1393.2	1417.6	1434.3	1451.2	1449.7
132.5°	1469.4	1489.3	1506.0	1519.7	1518.3
135°	1533.5	1557.9	1571.6	1586.9	1583.9
137.5°	1600.4	1618.8	1634.1	1649.4	1644.8
140°	1666.0	1678.3	1695.0	1708.7	1701.1
142.5°	1721.0	1731.7	1751.4	1763.5	1756.0
145°	1779.0	1777.4	1803.2	1813.9	1806.3
147.5°	1829.1	1824.6	1850.5	1858.1	1852.1
150°	1877.9	1867.3	1891.8	1900.8	1893.2
152.5°	1919.0	1906.9	1929.8	1938.9	1928.3
155°	1958.7	1945.1	1963.4	1972.5	1960.3
157.5°	1990.7	1978.6	1992.3	2003.0	1990.7
160°	2018.3	2009.0	2018.3	2027.3	2016.6
162.5°	2042.6	2033.5	2041.0	2051.7	2038.0
165°	2063.9	2054.9	2059.3	2070.0	2059.3
167.5°	2080.7	2071.4	2076.2	2086.9	2073.1
170°	2094.4	2085.3	2088.3	2099.0	2085.3
172.5°	2103.5	2094.4	2097.6	2108.2	2094.4
175°	2111.1	2100.4	2103.5	2114.2	2099.0
177.5°	2114.2	2103.5	2105.1	2115.9	2102.0
180°	2106.6	2106.6	2106.6	2106.6	2106.6



TEST NUMBER: P923109  
 CATALOG NUMBER: DFN2DIP-SQ4F0-080D070US940-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	9.91	10.80	10.83	11.74	12.97	9.46	10.35	10.39	11.30	12.52
	3H	11.57	12.37	12.51	13.33	14.57	11.08	11.88	12.02	12.84	14.08
	4H	12.17	12.92	13.12	13.88	15.14	11.67	12.43	12.62	13.39	14.64
	6H	12.57	13.27	13.54	14.23	15.50	12.07	12.77	13.03	13.73	15.00
	8H	12.68	13.34	13.65	14.32	15.59	12.18	12.84	13.15	13.82	15.09
	12H	12.73	13.36	13.71	14.34	15.63	12.22	12.85	13.20	13.83	15.12
4H	2H	10.37	11.13	11.33	12.09	13.34	10.02	10.77	10.98	11.73	12.99
	3H	12.24	12.88	13.21	13.87	15.14	11.84	12.47	12.81	13.46	14.73
	4H	12.96	13.54	13.94	14.52	15.82	12.54	13.12	13.52	14.10	15.39
	6H	13.49	13.98	14.48	14.99	16.28	13.05	13.55	14.04	14.56	15.85
	8H	13.64	14.10	14.63	15.10	16.41	13.20	13.67	14.19	14.67	15.97
	12H	13.71	14.13	14.73	15.15	16.46	13.27	13.69	14.28	14.70	16.01
8H	4H	13.16	13.63	14.16	14.63	15.93	12.79	13.25	13.78	14.25	15.56
	6H	13.80	14.19	14.82	15.23	16.53	13.42	13.80	14.43	14.84	16.15
	8H	14.03	14.36	15.05	15.39	16.72	13.63	13.97	14.66	15.00	16.32
	12H	14.16	14.46	15.19	15.48	16.85	13.75	14.05	14.78	15.07	16.44
12H	4H	13.15	13.57	14.16	14.59	15.90	12.78	13.20	13.79	14.22	15.53
	6H	13.83	14.17	14.86	15.20	16.52	13.46	13.80	14.49	14.83	16.15
	8H	14.08	14.38	15.11	15.40	16.77	13.70	14.00	14.73	15.02	16.39