

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: P914997

Luminaire Tested: DFN2DIP-SQ4F0-100D070US927-FLLONL

Issue Date: 11/21/2024

**Test Information**

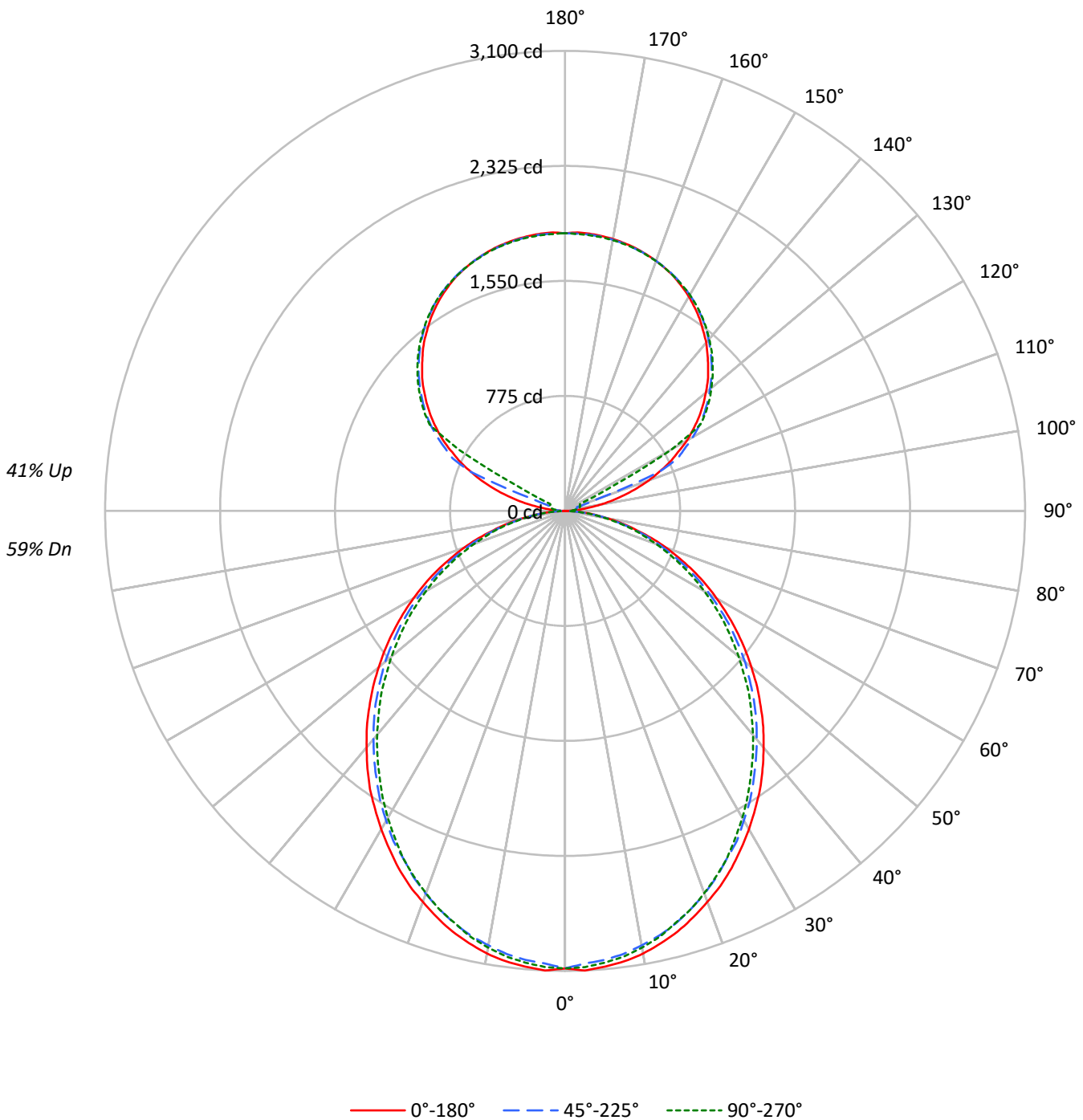
Test Method: LM-79-2019  
Report Number: P914997  
REPORT IS A COMBINATION OF REPORTS P901605 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-100D070US927-FLLONL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13332.4 lumens  
Efficiency: N/A  
Efficacy: 92.0 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): 144.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot





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**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	109	109	109	109	102	102	102	102	88	88	88	76	76	76	64	64	64	64	64	64	59
1	100	95	91	88	93	89	86	83	77	75	73	67	65	63	57	56	54	54	54	54	50
2	91	83	77	72	85	78	72	68	68	64	60	59	55	53	50	48	46	46	46	46	42
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	44	41	39	39	39	39	35
4	76	65	57	51	71	61	54	48	53	48	43	46	42	38	40	36	34	34	34	34	30
5	70	58	50	44	65	54	47	41	48	42	37	42	37	33	36	32	29	29	29	29	26
6	64	52	44	38	60	49	41	36	43	37	33	38	33	29	32	29	26	26	26	26	23
7	59	47	39	33	55	44	37	32	39	33	29	34	29	26	30	26	23	23	23	23	20
8	55	43	35	29	51	40	33	28	36	30	26	31	27	23	27	23	21	21	21	21	18
9	51	39	31	26	48	37	30	25	33	27	23	29	24	21	25	21	19	19	19	19	17
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	23	20	17	17	17	17	15

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

	0°	45°	90°
0°	2163	2163	2163
5°	2166	2133	2148
10°	2149	2105	2119
15°	2117	2071	2074
20°	2074	2023	2028
25°	2032	1966	1975
30°	1979	1913	1908
35°	1928	1850	1836
40°	1866	1786	1768
45°	1804	1723	1698
50°	1736	1656	1617
55°	1665	1579	1543
60°	1585	1488	1458
65°	1498	1393	1358
70°	1387	1278	1250
75°	1232	1140	1152
80°	1047	964	963
85°	757	659	647

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1804 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	290.1	2.2
10°-20°	816.3	6.1
20°-30°	1199.6	9.0
30°-40°	1393.3	10.5
40°-50°	1391.5	10.4
50°-60°	1213.4	9.1
60°-70°	897.0	6.7
70°-80°	507.5	3.8
80°-90°	137.2	1.0
90°-100°	61.7	0.5
100°-110°	230.0	1.7
110°-120°	610.1	4.6
120°-130°	1011.9	7.6
130°-140°	1074.9	8.1
140°-150°	999.0	7.5
150°-160°	803.2	6.0
160°-170°	517.5	3.9
170°-180°	178.1	1.3
0°-30°	2306.0	17.3
0°-40°	3699.3	27.7
0°-60°	6304.2	47.3
0°-90°	7845.9	58.8
90°-120°	901.9	6.8
90°-150°	3987.7	29.9
90°-180°	5487.0	41.2
0°-180°	13332.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3082	3082	3082	3082	3082	
5°	3082	3071	3038	3062	3056	293
15°	2934	2917	2878	2890	2875	826
25°	2656	2632	2582	2587	2582	1222
35°	2291	2262	2214	2196	2181	1431
45°	1864	1844	1799	1767	1755	1439
55°	1411	1393	1358	1322	1307	1262
65°	952	934	904	877	863	941
75°	498	492	477	460	465	531
85°	121	119	116	107	104	135
90°	1	16	27	34	36	12
95°	88	43	53	60	58	104
105°	412	452	83	97	103	440
115°	779	802	836	209	111	767
125°	1101	1119	1144	1154	1158	982
135°	1362	1384	1396	1410	1407	1052
145°	1580	1579	1602	1612	1605	988
155°	1740	1728	1744	1752	1742	802
165°	1834	1826	1830	1839	1830	518
175°	1876	1866	1869	1878	1865	178
180°	1871	1871	1871	1871	1871	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3082.5	3082.5	3082.5	3082.5	3082.5
2.5°	3100.4	3085.5	3052.8	3082.5	3076.8
5°	3082.5	3070.8	3038.1	3061.7	3056.0
7.5°	3061.7	3044.0	3011.3	3035.2	3029.3
10°	3029.3	3008.5	2973.0	2996.6	2987.8
12.5°	2984.6	2967.0	2931.5	2946.3	2940.3
15°	2934.3	2916.7	2878.0	2890.0	2875.2
17.5°	2872.1	2854.5	2815.7	2830.5	2815.7
20°	2803.8	2786.2	2744.7	2753.5	2741.8
22.5°	2735.9	2709.2	2670.4	2670.4	2664.5
25°	2655.7	2632.1	2581.8	2587.4	2581.8
27.5°	2566.7	2545.9	2507.6	2498.8	2484.0
30°	2478.0	2454.1	2409.7	2400.9	2389.0
32.5°	2383.0	2365.5	2317.9	2300.0	2288.1
35°	2291.2	2261.7	2214.1	2196.2	2181.4
37.5°	2187.4	2160.7	2113.2	2092.5	2077.7
40°	2080.8	2056.9	2009.4	1983.1	1971.1
42.5°	1977.0	1953.1	1906.0	1876.1	1858.5
45°	1864.5	1843.7	1799.0	1766.6	1754.8
47.5°	1754.8	1734.0	1686.5	1653.8	1636.2
50°	1639.0	1624.2	1582.7	1541.2	1526.5
52.5°	1526.5	1505.7	1467.3	1434.6	1413.9
55°	1411.0	1393.1	1357.6	1322.0	1307.3
57.5°	1295.3	1280.5	1241.8	1206.3	1194.4
60°	1179.6	1167.9	1126.4	1093.7	1084.9
62.5°	1067.0	1046.2	1016.7	987.1	975.2
65°	951.6	933.7	904.1	877.3	862.6
67.5°	833.1	817.9	791.5	770.8	758.8
70°	723.3	711.3	684.6	663.8	652.2
72.5°	610.7	598.7	584.0	563.2	554.4
75°	497.8	492.2	477.1	459.5	465.4
77.5°	397.2	385.2	379.2	370.4	361.6
80°	296.5	293.4	287.4	278.6	272.7
82.5°	201.6	201.6	198.8	186.8	186.8
85°	121.4	118.6	115.7	106.6	103.8
87.5°	53.5	47.5	41.5	32.7	29.5
90°	1.3	16.2	27.0	33.9	36.5
92.5°	33.9	28.4	32.5	35.3	36.5
95°	87.9	43.3	52.8	59.7	58.2
97.5°	158.4	47.5	69.0	73.2	74.5
100°	239.8	54.2	77.2	87.9	90.7
102.5°	329.0	326.5	79.9	94.7	98.9
105°	411.7	452.3	82.6	97.4	102.9
107.5°	507.8	541.6	85.4	100.2	105.7
110°	600.0	628.3	237.0	101.6	106.9



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	686.7	710.9	687.9	104.2	108.4
115°	778.6	801.6	835.5	208.6	111.1
117.5°	858.6	885.6	908.7	714.9	360.2
120°	947.9	968.2	992.7	1008.9	826.1
122.5°	1023.7	1045.4	1072.6	1080.6	1082.0
125°	1100.9	1118.6	1144.3	1153.8	1157.8
127.5°	1171.3	1190.3	1210.7	1224.2	1225.5
130°	1237.7	1259.4	1274.2	1289.2	1287.9
132.5°	1305.4	1323.1	1337.9	1350.1	1348.8
135°	1362.3	1384.0	1396.1	1409.8	1407.1
137.5°	1421.8	1438.1	1451.8	1465.3	1461.3
140°	1480.0	1491.0	1505.8	1518.0	1511.2
142.5°	1528.9	1538.4	1555.9	1566.7	1560.0
145°	1580.4	1579.0	1601.9	1611.5	1604.7
147.5°	1624.9	1621.0	1643.9	1650.7	1645.4
150°	1668.3	1658.9	1680.6	1688.6	1681.9
152.5°	1704.9	1694.1	1714.4	1722.5	1713.1
155°	1740.1	1728.0	1744.2	1752.3	1741.5
157.5°	1768.5	1757.8	1770.0	1779.5	1768.5
160°	1793.0	1784.8	1793.0	1801.0	1791.5
162.5°	1814.6	1806.5	1813.2	1822.7	1810.5
165°	1833.5	1825.5	1829.5	1839.0	1829.5
167.5°	1848.5	1840.2	1844.4	1853.9	1841.7
170°	1860.7	1852.5	1855.2	1864.7	1852.5
172.5°	1868.8	1860.7	1863.4	1872.9	1860.7
175°	1875.5	1866.0	1868.8	1878.2	1864.7
177.5°	1878.2	1868.8	1870.2	1879.7	1867.4
180°	1871.4	1871.4	1871.4	1871.4	1871.4



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**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	10.74	11.69	11.62	12.59	13.73	10.30	11.25	11.18	12.14	13.28
	3H	12.41	13.26	13.30	14.17	15.34	11.92	12.77	12.81	13.68	14.85
	4H	13.01	13.81	13.91	14.73	15.90	12.51	13.32	13.42	14.23	15.41
	6H	13.42	14.16	14.33	15.08	16.26	12.92	13.66	13.83	14.58	15.76
	8H	13.53	14.23	14.45	15.17	16.36	13.02	13.73	13.95	14.67	15.85
	12H	13.58	14.25	14.51	15.18	16.39	13.07	13.74	14.00	14.67	15.88
4H	2H	11.22	12.02	12.13	12.93	14.11	10.86	11.66	11.77	12.58	13.75
	3H	13.09	13.76	14.01	14.71	15.90	12.69	13.36	13.61	14.30	15.49
	4H	13.82	14.43	14.75	15.37	16.58	13.39	14.00	14.32	14.94	16.16
	6H	14.34	14.87	15.28	15.83	17.05	13.91	14.44	14.85	15.40	16.61
	8H	14.49	14.99	15.44	15.94	17.17	14.06	14.55	15.00	15.51	16.74
	12H	14.57	15.02	15.54	15.99	17.23	14.12	14.57	15.09	15.54	16.78
8H	4H	14.02	14.51	14.97	15.47	16.70	13.64	14.14	14.59	15.09	16.32
	6H	14.66	15.07	15.63	16.07	17.29	14.27	14.68	15.25	15.68	16.91
	8H	14.88	15.24	15.87	16.23	17.48	14.49	14.85	15.47	15.84	17.09
	12H	15.02	15.34	16.01	16.32	17.61	14.61	14.93	15.60	15.91	17.20
12H	4H	14.01	14.45	14.98	15.43	16.66	13.64	14.09	14.61	15.06	16.29
	6H	14.69	15.05	15.67	16.04	17.28	14.32	14.68	15.30	15.67	16.91
	8H	14.94	15.26	15.92	16.24	17.53	14.56	14.88	15.54	15.86	17.15