

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: P921367

Luminaire Tested: DFN2DIP-4P3F0-060D060US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921367
REPORT IS A COMBINATION OF REPORTS P900597 AND P897473
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P3F0-060D060US940-FLLONL
Description: 3 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

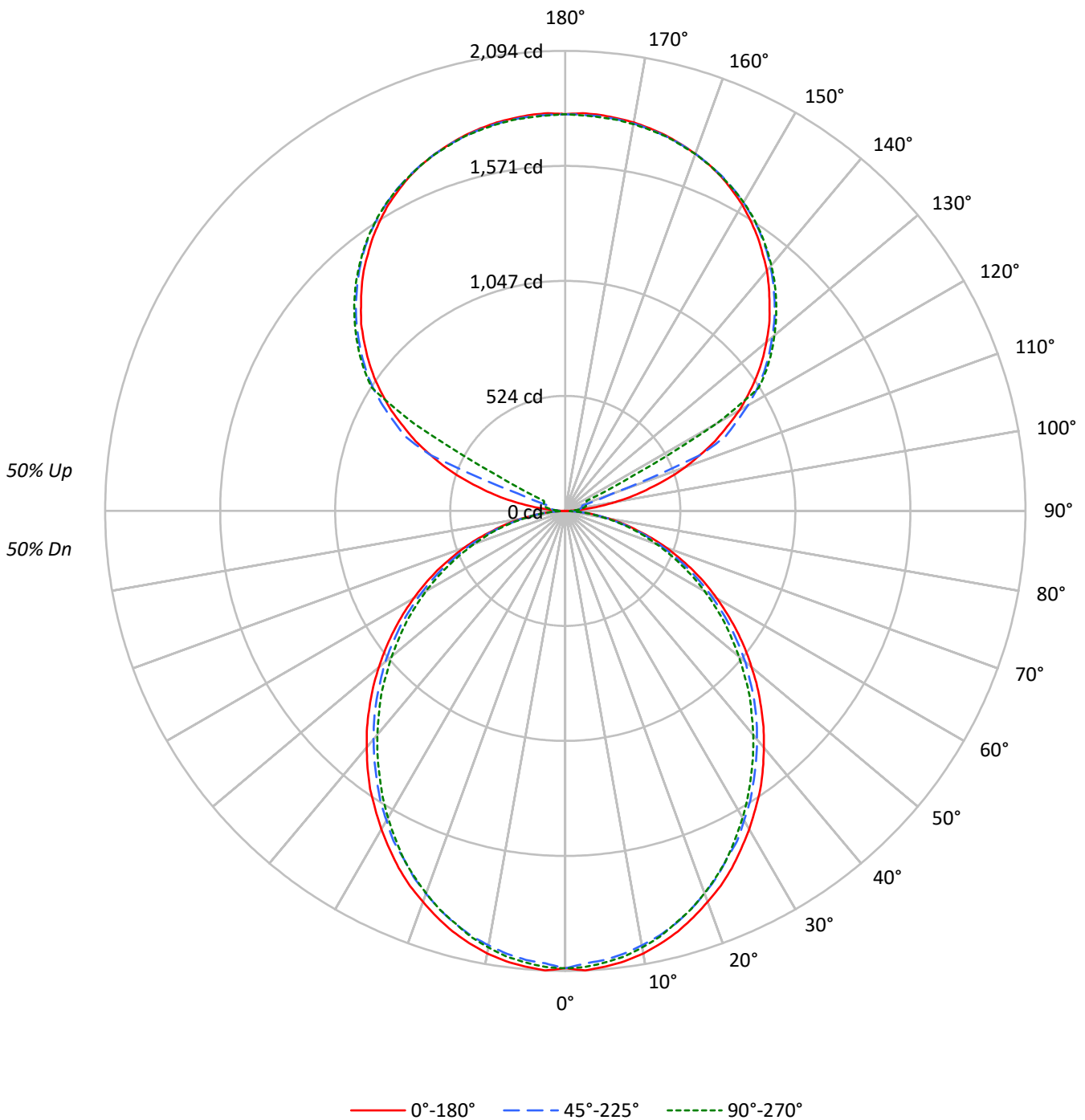
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10593.5 lumens
Efficiency: N/A
Efficacy: 97.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.07' x L: 3.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 109.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9963
Total Harmonic Distortion (THDi): 0.065
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	56	56	56	50
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47	50	48	47	42
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40	44	42	40	35
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34	39	36	34	30
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29	35	32	29	26
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26	31	28	26	22
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23	28	25	23	20
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20	26	23	20	17
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18	24	20	18	16
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16	22	19	16	14
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15	20	17	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2372	2372	2372
5°	2375	2338	2354
10°	2354	2305	2322
15°	2318	2265	2271
20°	2270	2211	2219
25°	2222	2146	2160
30°	2162	2086	2084
35°	2105	2015	2004
40°	2035	1944	1928
45°	1966	1872	1850
50°	1889	1797	1759
55°	1809	1709	1676
60°	1719	1606	1581
65°	1620	1499	1469
70°	1494	1368	1347
75°	1320	1211	1234
80°	1110	1010	1020
85°	781	669	668

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1966 cd/sqm



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CATALOG NUMBER: DFN2DIP-4P3F0-060D060US940-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	195.9	1.8
10°-20°	551.3	5.2
20°-30°	810.2	7.6
30°-40°	941.0	8.9
40°-50°	939.8	8.9
50°-60°	819.5	7.7
60°-70°	605.8	5.7
70°-80°	342.7	3.2
80°-90°	93.6	0.9
90°-100°	59.5	0.6
100°-110°	222.0	2.1
110°-120°	588.7	5.6
120°-130°	976.3	9.2
130°-140°	1037.1	9.8
140°-150°	963.9	9.1
150°-160°	774.9	7.3
160°-170°	499.3	4.7
170°-180°	171.9	1.6
0°-30°	1557.4	14.7
0°-40°	2498.4	23.6
0°-60°	4257.8	40.2
0°-90°	5300.0	50.0
90°-120°	870.2	8.2
90°-150°	3847.4	36.3
90°-180°	5294.0	50.0
0°-180°	10593.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2082	2082	2082	2082	2082	
5°	2082	2074	2052	2068	2064	198
15°	1982	1970	1944	1952	1942	558
25°	1794	1778	1744	1748	1744	825
35°	1548	1528	1495	1483	1473	966
45°	1259	1245	1215	1193	1185	972
55°	953	941	917	893	883	852
65°	643	631	611	592	583	635
75°	336	332	322	310	314	359
85°	82	80	78	72	70	91
90°	1	16	26	33	35	10
95°	85	42	51	58	56	101
105°	397	436	80	94	99	424
115°	751	774	806	201	107	740
125°	1062	1079	1104	1113	1117	947
135°	1314	1335	1347	1360	1358	1015
145°	1525	1523	1546	1555	1548	954
155°	1679	1667	1683	1691	1680	774
165°	1769	1761	1765	1774	1765	500
175°	1810	1800	1803	1812	1799	172
180°	1806	1806	1806	1806	1806	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2081.8	2081.8	2081.8	2081.8	2081.8
2.5°	2093.9	2083.9	2061.8	2081.8	2078.0
5°	2081.8	2073.9	2051.8	2067.8	2064.0
7.5°	2067.8	2055.9	2033.8	2050.0	2045.9
10°	2045.9	2031.9	2007.9	2023.8	2017.9
12.5°	2015.8	2003.9	1979.9	1989.9	1985.8
15°	1981.7	1969.9	1943.8	1951.9	1941.9
17.5°	1939.7	1927.9	1901.8	1911.6	1901.8
20°	1893.6	1881.8	1853.7	1859.7	1851.8
22.5°	1847.8	1829.7	1803.6	1803.6	1799.6
25°	1793.6	1777.7	1743.7	1747.5	1743.7
27.5°	1733.5	1719.5	1693.5	1687.7	1677.7
30°	1673.7	1657.4	1627.5	1621.6	1613.5
32.5°	1609.4	1597.6	1565.5	1553.4	1545.3
35°	1547.5	1527.5	1495.4	1483.3	1473.3
37.5°	1477.4	1459.3	1427.3	1413.2	1403.2
40°	1405.3	1389.2	1357.2	1339.3	1331.2
42.5°	1335.2	1319.1	1287.3	1267.1	1255.2
45°	1259.3	1245.2	1215.0	1193.2	1185.1
47.5°	1185.1	1171.1	1139.1	1117.0	1105.0
50°	1107.0	1097.0	1069.0	1040.9	1030.9
52.5°	1030.9	1016.9	991.0	968.9	954.9
55°	953.0	940.8	916.9	892.9	882.9
57.5°	874.9	864.9	838.7	814.8	806.6
60°	796.7	788.8	760.8	738.7	732.7
62.5°	720.6	706.6	686.6	666.6	658.6
65°	642.7	630.6	610.6	592.5	582.6
67.5°	562.6	552.4	534.6	520.6	512.5
70°	488.5	480.5	462.4	448.4	440.5
72.5°	412.4	404.4	394.4	380.4	374.4
75°	336.2	332.4	322.2	310.3	314.3
77.5°	268.2	260.2	256.1	250.2	244.2
80°	200.3	198.1	194.1	188.2	184.1
82.5°	136.2	136.2	134.2	126.2	126.2
85°	81.9	80.1	78.1	72.0	70.1
87.5°	36.1	32.1	28.0	22.1	20.0
90°	1.2	15.7	26.0	32.7	35.2
92.5°	32.7	27.5	31.3	34.0	35.2
95°	84.9	41.7	50.9	57.6	56.2
97.5°	152.8	45.7	66.5	70.6	71.9
100°	231.3	52.3	74.5	84.9	87.5
102.5°	317.4	315.0	77.1	91.4	95.4
105°	397.2	436.4	79.7	94.0	99.3
107.5°	490.0	522.5	82.4	96.7	101.9
110°	578.9	606.2	228.7	98.1	103.2



TEST NUMBER: P921367

CATALOG NUMBER: DFN2DIP-4P3F0-060D060US940-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	662.5	685.9	663.7	100.5	104.6
115°	751.3	773.5	806.2	201.3	107.2
117.5°	828.3	854.4	876.7	689.8	347.5
120°	914.6	934.2	957.8	973.4	797.0
122.5°	987.7	1008.6	1034.8	1042.6	1044.0
125°	1062.2	1079.2	1104.0	1113.2	1117.0
127.5°	1130.2	1148.4	1168.1	1181.2	1182.4
130°	1194.2	1215.1	1229.4	1243.8	1242.6
132.5°	1259.5	1276.6	1290.8	1302.6	1301.4
135°	1314.5	1335.4	1347.0	1360.2	1357.5
137.5°	1371.8	1387.5	1400.7	1413.7	1409.9
140°	1428.0	1438.6	1452.9	1464.6	1458.1
142.5°	1475.2	1484.3	1501.3	1511.6	1505.1
145°	1524.8	1523.4	1545.6	1554.8	1548.3
147.5°	1567.8	1563.9	1586.1	1592.6	1587.5
150°	1609.7	1600.5	1621.5	1629.2	1622.7
152.5°	1644.9	1634.5	1654.0	1662.0	1652.8
155°	1678.9	1667.2	1682.9	1690.7	1680.2
157.5°	1706.4	1695.9	1707.7	1716.9	1706.4
160°	1729.9	1722.0	1729.9	1737.7	1728.6
162.5°	1750.7	1742.9	1749.4	1758.6	1746.9
165°	1769.1	1761.3	1765.1	1774.3	1765.1
167.5°	1783.4	1775.6	1779.6	1788.8	1776.9
170°	1795.3	1787.3	1790.0	1799.1	1787.3
172.5°	1803.0	1795.3	1797.9	1807.1	1795.3
175°	1809.5	1800.4	1803.0	1812.1	1799.1
177.5°	1812.1	1803.0	1804.4	1813.6	1801.8
180°	1805.6	1805.6	1805.6	1805.6	1805.6



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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	10.24	11.10	11.20	12.08	13.35	9.80	10.66	10.76	11.63	12.90
	3H	11.90	12.67	12.87	13.65	14.95	11.41	12.18	12.38	13.16	14.46
	4H	12.48	13.22	13.47	14.20	15.50	11.99	12.72	12.97	13.71	15.01
	6H	12.88	13.55	13.87	14.54	15.86	12.38	13.05	13.37	14.04	15.36
	8H	12.98	13.63	13.98	14.63	15.94	12.48	13.12	13.48	14.13	15.44
	12H	13.03	13.64	14.03	14.64	15.98	12.52	13.13	13.52	14.13	15.47
4H	2H	10.70	11.43	11.69	12.42	13.72	10.35	11.08	11.33	12.06	13.36
	3H	12.56	13.17	13.56	14.19	15.50	12.15	12.76	13.15	13.78	15.09
	4H	13.27	13.83	14.28	14.84	16.18	12.85	13.41	13.85	14.41	15.75
	6H	13.78	14.26	14.80	15.29	16.63	13.35	13.83	14.37	14.86	16.20
	8H	13.93	14.38	14.95	15.40	16.75	13.49	13.94	14.51	14.97	16.32
	12H	14.00	14.41	15.04	15.45	16.80	13.55	13.96	14.59	15.00	16.35
8H	4H	13.46	13.91	14.48	14.94	16.29	13.09	13.54	14.11	14.56	15.91
	6H	14.09	14.46	15.13	15.53	16.88	13.71	14.08	14.75	15.14	16.49
	8H	14.31	14.63	15.36	15.69	17.05	13.91	14.24	14.96	15.29	16.66
	12H	14.44	14.72	15.49	15.77	17.18	14.02	14.31	15.08	15.36	16.77
12H	4H	13.45	13.85	14.49	14.89	16.25	13.08	13.49	14.12	14.53	15.88
	6H	14.12	14.45	15.17	15.50	16.86	13.75	14.07	14.80	15.12	16.49
	8H	14.36	14.64	15.41	15.69	17.10	13.98	14.26	15.03	15.31	16.72