

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: P921463

Luminaire Tested: DFN2DIP-4P4F0-060D080US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P921463
REPORT IS A COMBINATION OF REPORTS P900665 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-060D080US940-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

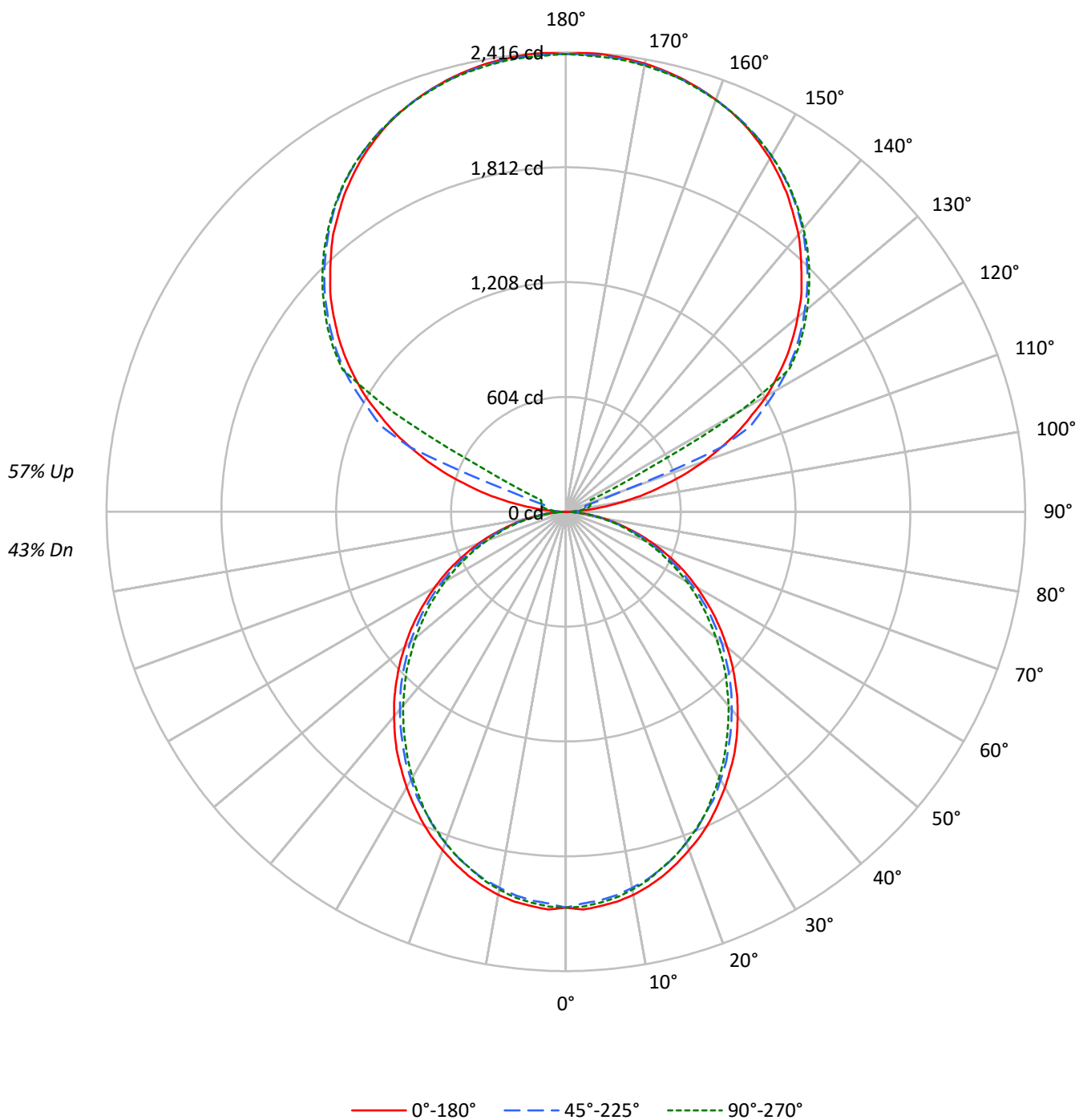
Lumens per Lamp: N/A
Luminaire Lumens: 12359.1 lumens
Efficiency: N/A
Efficacy: 91.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 135
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	105	105	105	105	96	96	96	96	79	79	79	64	64	64	50	50	50
1	96	92	88	85	88	84	81	78	70	67	65	56	55	53	44	43	42
2	88	80	74	69	80	74	68	64	61	57	54	49	47	44	39	37	35
3	80	71	63	58	73	65	58	53	54	49	45	44	40	38	34	32	30
4	73	62	55	49	66	57	50	45	48	43	39	39	35	32	31	28	26
5	67	56	48	42	61	51	44	39	43	37	33	35	31	28	28	25	23
6	62	50	42	36	56	46	39	34	38	33	29	31	27	24	25	22	20
7	57	45	37	32	52	41	34	29	35	29	25	29	25	22	23	20	18
8	53	41	33	28	48	38	31	26	32	26	23	26	22	19	21	18	16
9	49	37	30	25	45	34	28	23	29	24	20	24	20	17	19	16	14
10	46	34	27	22	42	31	25	21	27	22	18	22	18	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1351	1351	1351
5°	1353	1332	1341
10°	1342	1315	1324
15°	1322	1293	1296
20°	1296	1264	1267
25°	1269	1228	1234
30°	1236	1195	1192
35°	1205	1156	1147
40°	1166	1117	1105
45°	1128	1077	1061
50°	1085	1036	1011
55°	1041	988	965
60°	992	931	912
65°	937	872	850
70°	868	801	783
75°	772	715	722
80°	657	606	604
85°	476	416	407

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1242 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	195.9	1.6
10°-20°	551.3	4.5
20°-30°	810.2	6.6
30°-40°	941.0	7.6
40°-50°	939.8	7.6
50°-60°	819.5	6.6
60°-70°	605.8	4.9
70°-80°	342.7	2.8
80°-90°	94.7	0.8
90°-100°	79.4	0.6
100°-110°	295.9	2.4
110°-120°	784.9	6.4
120°-130°	1301.8	10.5
130°-140°	1382.8	11.2
140°-150°	1285.1	10.4
150°-160°	1033.2	8.4
160°-170°	665.8	5.4
170°-180°	229.2	1.9
0°-30°	1557.4	12.6
0°-40°	2498.4	20.2
0°-60°	4257.8	34.5
0°-90°	5301.0	42.9
90°-120°	1160.2	9.4
90°-150°	5129.9	41.5
90°-180°	7058.0	57.1
0°-180°	12359.1	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°	2	21	35	44	47	11
95°	113	56	68	77	75	134
105°	530	582	106	125	132	566
115°	1002	1031	1075	268	143	986
125°	1416	1439	1472	1484	1489	1263
135°	1753	1780	1796	1814	1810	1354
145°	2033	2031	2061	2073	2064	1272
155°	2238	2223	2244	2254	2240	1032
165°	2359	2348	2354	2366	2354	666
175°	2413	2400	2404	2416	2399	230
180°	2408	2408	2408	2408	2408	

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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°	1.7	20.9	34.8	43.6	47.0
92.5°	43.6	36.6	41.8	45.3	47.0
95°	113.2	55.6	67.9	76.8	74.9
97.5°	203.8	61.0	88.7	94.2	95.8
100°	308.4	69.7	99.3	113.2	116.6
102.5°	423.3	419.9	102.8	121.8	127.2
105°	529.6	581.9	106.3	125.4	132.4
107.5°	653.3	696.7	109.9	128.9	135.9
110°	771.9	808.2	305.0	130.7	137.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	883.3	914.5	885.0	134.0	139.5
115°	1001.7	1031.3	1074.9	268.3	142.9
117.5°	1104.5	1139.2	1169.0	919.7	463.4
120°	1219.5	1245.5	1277.0	1297.9	1062.7
122.5°	1316.9	1344.9	1379.8	1390.2	1392.0
125°	1416.2	1439.0	1472.0	1484.3	1489.4
127.5°	1506.8	1531.2	1557.6	1574.8	1576.5
130°	1592.2	1620.1	1639.2	1658.5	1656.8
132.5°	1679.4	1702.1	1721.2	1736.9	1735.2
135°	1752.6	1780.5	1796.0	1813.6	1810.1
137.5°	1829.2	1850.0	1867.6	1885.0	1879.8
140°	1904.0	1918.1	1937.2	1952.8	1944.1
142.5°	1966.9	1979.1	2001.6	2015.5	2006.8
145°	2033.1	2031.2	2060.8	2073.0	2064.3
147.5°	2090.4	2085.3	2114.8	2123.5	2116.7
150°	2146.3	2134.0	2162.0	2172.3	2163.6
152.5°	2193.3	2179.3	2205.4	2216.0	2203.8
155°	2238.5	2223.0	2243.9	2254.2	2240.4
157.5°	2275.1	2261.3	2277.0	2289.2	2275.1
160°	2306.6	2296.1	2306.6	2316.9	2304.7
162.5°	2334.3	2324.0	2332.6	2344.8	2329.1
165°	2358.8	2348.4	2353.6	2365.7	2353.6
167.5°	2377.9	2367.4	2372.8	2385.0	2369.3
170°	2393.7	2383.1	2386.7	2398.9	2383.1
172.5°	2404.1	2393.7	2397.2	2409.4	2393.7
175°	2412.7	2400.5	2404.1	2416.2	2398.9
177.5°	2416.2	2404.1	2405.8	2418.1	2402.4
180°	2407.5	2407.5	2407.5	2407.5	2407.5

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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	7.64	8.44	8.66	9.47	10.84	7.20	8.00	8.21	9.02	10.39
	3H	9.30	10.02	10.33	11.05	12.44	8.81	9.53	9.84	10.56	11.95
	4H	9.89	10.57	10.93	11.61	13.00	9.40	10.08	10.43	11.11	12.51
	6H	10.29	10.92	11.34	11.96	13.37	9.79	10.42	10.84	11.46	12.87
	8H	10.40	10.99	11.45	12.05	13.45	9.90	10.49	10.95	11.55	12.95
	12H	10.45	11.01	11.50	12.06	13.49	9.94	10.50	10.99	11.55	12.98
4H	2H	8.10	8.78	9.14	9.81	11.21	7.74	8.42	8.79	9.46	10.85
	3H	9.96	10.53	11.02	11.59	13.00	9.55	10.12	10.61	11.19	12.60
	4H	10.68	11.20	11.74	12.25	13.69	10.25	10.77	11.31	11.83	13.26
	6H	11.20	11.64	12.26	12.72	14.15	10.76	11.21	11.83	12.29	13.72
	8H	11.35	11.76	12.42	12.84	14.28	10.91	11.33	11.98	12.40	13.84
	12H	11.42	11.80	12.51	12.88	14.33	10.97	11.35	12.06	12.43	13.88
8H	4H	10.87	11.29	11.94	12.36	13.80	10.49	10.91	11.56	11.98	13.43
	6H	11.51	11.85	12.60	12.96	14.40	11.12	11.47	12.21	12.58	14.02
	8H	11.73	12.03	12.83	13.13	14.59	11.34	11.64	12.44	12.74	14.20
	12H	11.86	12.13	12.97	13.22	14.72	11.45	11.72	12.55	12.81	14.31
12H	4H	10.85	11.23	11.94	12.32	13.76	10.49	10.86	11.57	11.95	13.40
	6H	11.54	11.84	12.64	12.94	14.39	11.16	11.47	12.26	12.56	14.02
	8H	11.78	12.05	12.88	13.14	14.64	11.40	11.67	12.50	12.76	14.26