

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: P902367

Luminaire Tested: DFN2DIP-4P4F0-060D080US830-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P902367
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-4P4F0-060D080US830-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

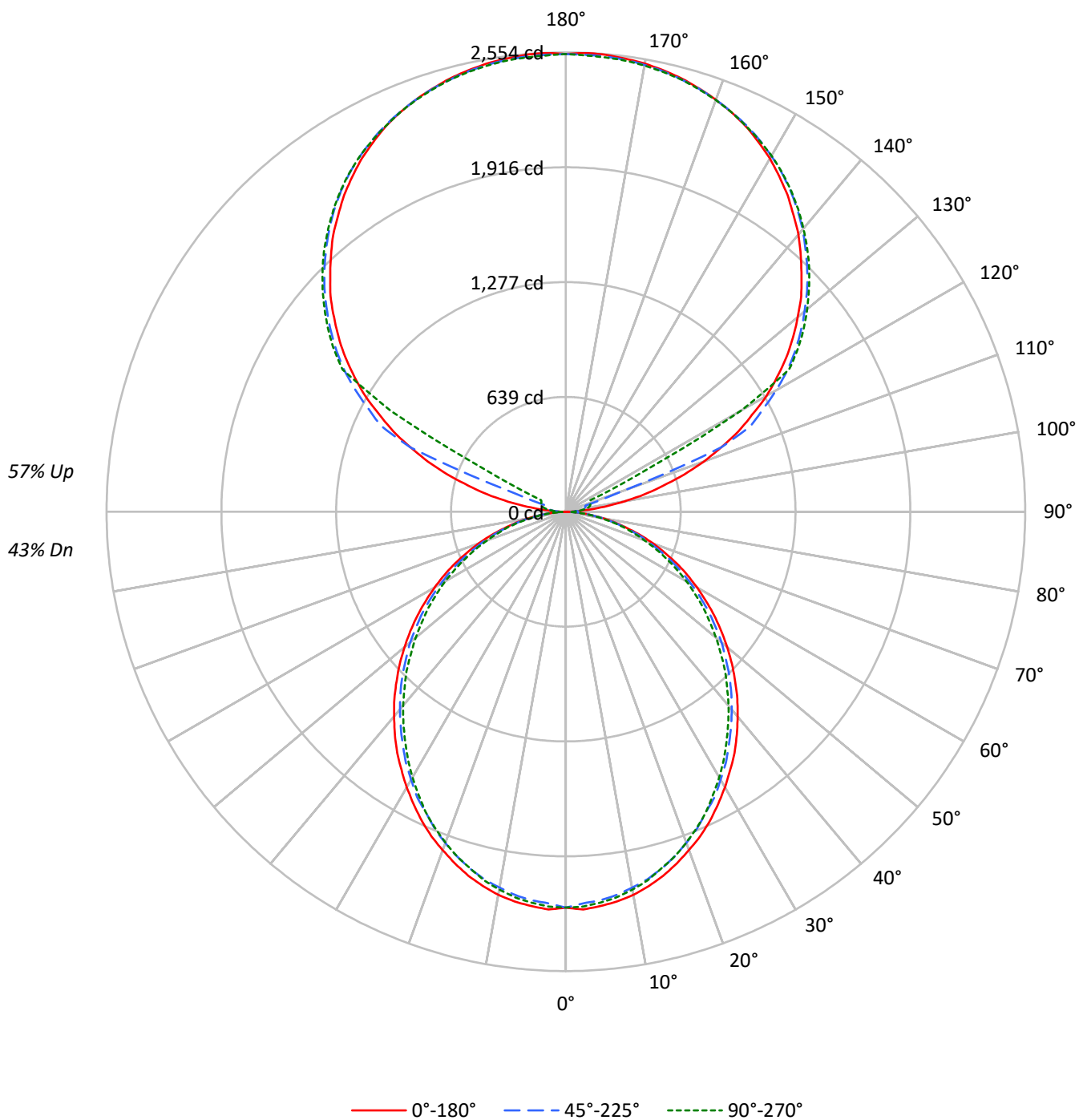
Lumens per Lamp: N/A
Luminaire Lumens: 13063.7 lumens
Efficiency: N/A
Efficacy: 96.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

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

TEST NUMBER: P902367

CATALOG NUMBER: DFN2DIP-4P4F0-060D080US830-FLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P902367

CATALOG NUMBER: DFN2DIP-4P4F0-060D080US830-FLONL

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°	1428	1428	1428
5°	1430	1408	1418
10°	1418	1390	1399
15°	1398	1367	1370
20°	1370	1336	1339
25°	1342	1298	1304
30°	1307	1263	1260
35°	1274	1222	1212
40°	1233	1180	1168
45°	1192	1139	1122
50°	1147	1095	1069
55°	1101	1044	1020
60°	1048	984	964
65°	991	922	898
70°	917	846	827
75°	816	756	763
80°	694	641	638
85°	503	440	431

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1313 cd/sqm

TEST NUMBER: P902367

CATALOG NUMBER: DFN2DIP-4P4F0-060D080US830-FLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	207.1	1.6
10°-20°	582.7	4.5
20°-30°	856.4	6.6
30°-40°	994.6	7.6
40°-50°	993.4	7.6
50°-60°	866.2	6.6
60°-70°	640.3	4.9
70°-80°	362.3	2.8
80°-90°	100.1	0.8
90°-100°	83.9	0.6
100°-110°	312.8	2.4
110°-120°	829.6	6.4
120°-130°	1376.0	10.5
130°-140°	1461.6	11.2
140°-150°	1358.4	10.4
150°-160°	1092.1	8.4
160°-170°	703.7	5.4
170°-180°	242.2	1.9
0°-30°	1646.2	12.6
0°-40°	2640.9	20.2
0°-60°	4500.5	34.5
0°-90°	5603.2	42.9
90°-120°	1226.4	9.4
90°-150°	5422.4	41.5
90°-180°	7460.0	57.1
0°-180°	13063.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2200	2200	2200	2200	2200	
5°	2200	2192	2169	2186	2182	209
15°	2095	2082	2055	2063	2053	590
25°	1896	1879	1843	1847	1843	872
35°	1636	1615	1581	1568	1557	1021
45°	1331	1316	1284	1261	1253	1027
55°	1007	994	969	944	933	901
65°	679	667	646	626	616	672
75°	355	351	340	328	332	379
85°	87	85	83	76	74	97
90°	2	22	37	46	50	12
95°	120	59	72	81	79	142
105°	560	615	112	132	140	598
115°	1059	1090	1136	284	151	1042
125°	1497	1521	1556	1569	1574	1335
135°	1852	1882	1898	1917	1913	1431
145°	2149	2147	2178	2191	2182	1344
155°	2366	2350	2372	2383	2368	1090
165°	2493	2482	2488	2501	2488	704
175°	2550	2537	2541	2554	2536	243
180°	2545	2545	2545	2545	2545	

TEST NUMBER: P902367

CATALOG NUMBER: DFN2DIP-4P4F0-060D080US830-FLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2200.5	2200.5	2200.5	2200.5	2200.5
2.5°	2213.3	2202.7	2179.3	2200.5	2196.4
5°	2200.5	2192.2	2168.8	2185.7	2181.6
7.5°	2185.7	2173.1	2149.8	2166.8	2162.6
10°	2162.6	2147.8	2122.3	2139.2	2132.9
12.5°	2130.7	2118.1	2092.7	2103.3	2099.0
15°	2094.7	2082.2	2054.6	2063.1	2052.6
17.5°	2050.3	2037.8	2010.2	2020.6	2010.2
20°	2001.6	1989.0	1959.4	1965.7	1957.4
22.5°	1953.1	1934.0	1906.4	1906.4	1902.1
25°	1895.8	1879.1	1843.0	1847.1	1843.0
27.5°	1832.3	1817.5	1790.1	1783.9	1773.3
30°	1769.1	1751.9	1720.3	1714.0	1705.4
32.5°	1701.2	1688.7	1654.7	1641.9	1633.4
35°	1635.7	1614.6	1580.6	1567.8	1557.3
37.5°	1561.6	1542.5	1508.6	1493.7	1483.2
40°	1485.4	1468.4	1434.5	1415.7	1407.1
42.5°	1411.4	1394.3	1360.7	1339.4	1326.7
45°	1331.1	1316.2	1284.3	1261.2	1252.6
47.5°	1252.6	1237.8	1204.0	1180.6	1168.0
50°	1170.1	1159.5	1129.9	1100.2	1089.7
52.5°	1089.7	1074.9	1047.4	1024.2	1009.4
55°	1007.3	994.5	969.1	943.8	933.2
57.5°	924.7	914.2	886.6	861.2	852.6
60°	842.1	833.8	804.2	780.8	774.5
62.5°	761.7	746.9	725.8	704.6	696.2
65°	679.3	666.6	645.5	626.3	615.8
67.5°	594.6	583.9	565.1	550.3	541.7
70°	516.3	507.8	488.7	473.9	465.6
72.5°	435.9	427.4	416.9	402.1	395.8
75°	355.3	351.4	340.5	328.0	332.2
77.5°	283.5	275.0	270.7	264.5	258.2
80°	211.7	209.4	205.2	198.9	194.6
82.5°	143.9	143.9	141.9	133.4	133.4
85°	86.6	84.6	82.6	76.1	74.1
87.5°	38.2	33.9	29.6	23.4	21.1
90°	1.8	22.1	36.8	46.1	49.7
92.5°	46.1	38.7	44.2	47.9	49.7
95°	119.6	58.8	71.7	81.2	79.2
97.5°	215.4	64.5	93.8	99.5	101.2
100°	326.0	73.7	105.0	119.6	123.3
102.5°	447.4	443.8	108.7	128.8	134.5
105°	559.8	615.1	112.4	132.5	140.0
107.5°	690.5	736.4	116.1	136.2	143.6
110°	815.9	854.3	322.3	138.2	145.4

TEST NUMBER: P902367

CATALOG NUMBER: DFN2DIP-4P4F0-060D080US830-FLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	933.7	966.7	935.5	141.7	147.4
115°	1058.8	1090.1	1136.1	283.6	151.1
117.5°	1167.4	1204.2	1235.7	972.1	489.8
120°	1289.0	1316.5	1349.8	1371.9	1123.2
122.5°	1391.9	1421.5	1458.5	1469.4	1471.4
125°	1496.9	1521.0	1555.9	1568.9	1574.3
127.5°	1592.7	1618.5	1646.3	1664.6	1666.4
130°	1683.0	1712.5	1732.7	1753.0	1751.2
132.5°	1775.1	1799.1	1819.3	1835.9	1834.1
135°	1852.5	1882.0	1898.4	1917.0	1913.3
137.5°	1933.4	1955.5	1974.1	1992.4	1987.0
140°	2012.5	2027.4	2047.6	2064.2	2054.9
142.5°	2079.1	2091.9	2115.7	2130.4	2121.2
145°	2149.0	2147.0	2178.3	2191.2	2182.0
147.5°	2209.6	2204.1	2235.3	2244.6	2237.3
150°	2268.6	2255.7	2285.2	2296.1	2287.0
152.5°	2318.3	2303.6	2331.1	2342.3	2329.4
155°	2366.2	2349.8	2371.8	2382.7	2368.1
157.5°	2404.8	2390.2	2406.8	2419.7	2404.8
160°	2438.1	2427.0	2438.1	2449.0	2436.1
162.5°	2467.4	2456.5	2465.6	2478.5	2461.9
165°	2493.2	2482.3	2487.7	2500.6	2487.7
167.5°	2513.5	2502.4	2508.0	2520.9	2504.3
170°	2530.2	2518.9	2522.7	2535.6	2518.9
172.5°	2541.1	2530.2	2533.8	2546.7	2530.2
175°	2550.2	2537.3	2541.1	2553.9	2535.6
177.5°	2553.9	2541.1	2543.0	2555.9	2539.3
180°	2544.8	2544.8	2544.8	2544.8	2544.8

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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	7.83	8.63	8.85	9.66	11.03	7.39	8.19	8.40	9.21	10.58
	3H	9.49	10.21	10.52	11.25	12.64	9.00	9.72	10.03	10.76	12.15
	4H	10.08	10.76	11.12	11.80	13.20	9.59	10.27	10.63	11.31	12.70
	6H	10.48	11.11	11.53	12.15	13.56	9.98	10.61	11.03	11.65	13.06
	8H	10.59	11.19	11.64	12.24	13.65	10.09	10.68	11.14	11.74	13.15
	12H	10.64	11.20	11.70	12.26	13.68	10.13	10.70	11.19	11.75	13.17
4H	2H	8.29	8.97	9.33	10.00	11.40	7.93	8.61	8.98	9.65	11.05
	3H	10.15	10.72	11.21	11.79	13.20	9.75	10.31	10.80	11.38	12.79
	4H	10.87	11.39	11.93	12.45	13.88	10.45	10.97	11.51	12.02	13.45
	6H	11.39	11.83	12.46	12.91	14.34	10.96	11.40	12.02	12.48	13.91
	8H	11.54	11.96	12.61	13.03	14.47	11.10	11.52	12.17	12.59	14.03
	12H	11.61	11.99	12.70	13.07	14.52	11.16	11.54	12.25	12.63	14.07
8H	4H	11.06	11.48	12.13	12.55	13.99	10.69	11.10	11.76	12.18	13.62
	6H	11.70	12.04	12.79	13.16	14.60	11.32	11.66	12.41	12.77	14.21
	8H	11.92	12.23	13.02	13.32	14.78	11.53	11.83	12.63	12.93	14.39
	12H	12.05	12.32	13.16	13.41	14.91	11.64	11.91	12.75	13.00	14.50
12H	4H	11.05	11.42	12.13	12.51	13.96	10.68	11.06	11.77	12.14	13.59
	6H	11.73	12.03	12.83	13.13	14.59	11.36	11.66	12.46	12.76	14.22
	8H	11.97	12.24	13.07	13.33	14.83	11.59	11.86	12.70	12.95	14.45