

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: P920361

Luminaire Tested: DFN2DIP-SQ4F0-070D110US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920361
REPORT IS A COMBINATION OF REPORTS P901671 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D110US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

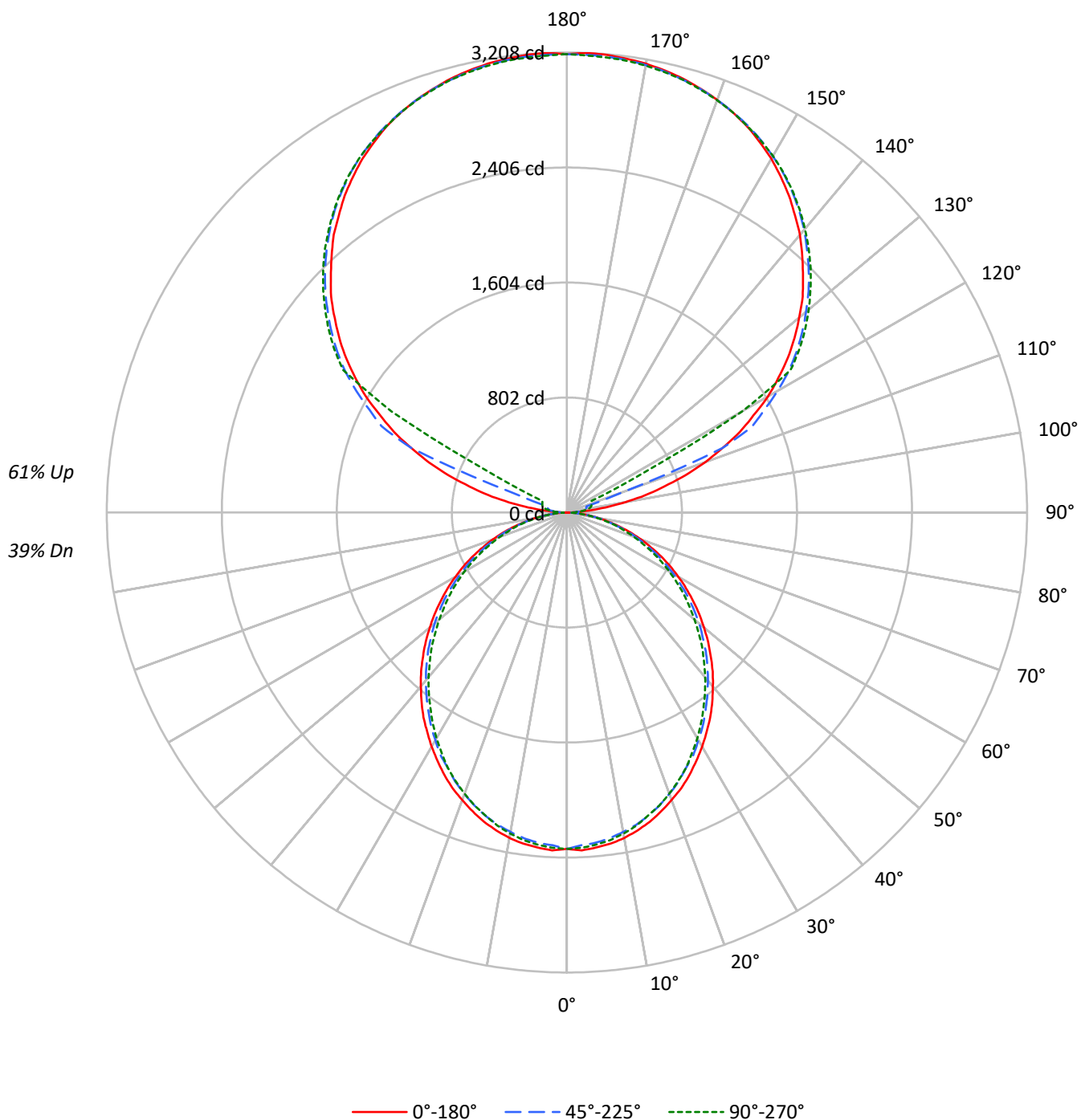
Lumens per Lamp: N/A
Luminaire Lumens: 15343.0 lumens
Efficiency: N/A
Efficacy: 106.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 144.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	95	95	95	95	77	77	77	61	61	61	46	46	46
1	95	91	87	84	86	83	80	77	68	65	63	54	52	51	41	40	39
2	87	79	73	68	79	72	67	63	59	56	52	47	44	42	36	34	33
3	79	70	63	57	72	64	58	53	52	48	44	42	38	36	32	30	28
4	72	62	54	48	65	56	50	44	46	41	37	37	33	31	28	26	24
5	66	55	47	41	60	50	43	38	41	36	32	33	29	26	25	23	21
6	61	49	41	36	55	45	38	33	37	32	28	30	26	23	23	20	18
7	56	44	37	31	51	41	34	29	34	28	25	27	23	20	21	18	16
8	52	40	33	27	47	37	30	26	31	26	22	25	21	18	19	17	15
9	49	37	29	24	44	34	27	23	28	23	19	23	19	16	18	15	13
10	45	34	26	22	41	31	25	20	26	21	17	21	17	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1646	1646	1646
5°	1648	1623	1634
10°	1635	1601	1612
15°	1611	1575	1578
20°	1578	1539	1543
25°	1546	1496	1503
30°	1505	1455	1451
35°	1467	1407	1397
40°	1420	1359	1345
45°	1373	1311	1292
50°	1321	1260	1230
55°	1267	1202	1174
60°	1206	1132	1109
65°	1140	1060	1033
70°	1055	972	951
75°	938	867	876
80°	796	734	732
85°	576	502	492

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1712 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	220.7	1.4
10°-20°	621.0	4.0
20°-30°	912.7	5.9
30°-40°	1060.0	6.9
40°-50°	1058.7	6.9
50°-60°	923.2	6.0
60°-70°	682.4	4.4
70°-80°	386.1	2.5
80°-90°	107.5	0.7
90°-100°	105.4	0.7
100°-110°	392.9	2.6
110°-120°	1042.0	6.8
120°-130°	1728.3	11.3
130°-140°	1835.9	12.0
140°-150°	1706.2	11.1
150°-160°	1371.8	8.9
160°-170°	883.9	5.8
170°-180°	304.2	2.0
0°-30°	1754.4	11.4
0°-40°	2814.4	18.3
0°-60°	4796.3	31.3
0°-90°	5972.4	38.9
90°-120°	1540.3	10.0
90°-150°	6810.7	44.4
90°-180°	9371.0	61.1
0°-180°	15343.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2345	2345	2345	2345	2345	
5°	2345	2336	2311	2329	2325	223
15°	2232	2219	2190	2199	2188	629
25°	2020	2002	1964	1969	1964	930
35°	1743	1721	1684	1671	1660	1089
45°	1418	1403	1369	1344	1335	1095
55°	1074	1060	1033	1006	994	960
65°	724	710	688	668	656	716
75°	379	374	363	350	354	404
85°	92	90	88	81	79	103
90°	2	28	46	58	62	14
95°	150	74	90	102	99	178
105°	703	773	141	166	176	751
115°	1330	1369	1427	356	190	1309
125°	1880	1910	1954	1971	1978	1677
135°	2327	2364	2384	2408	2403	1797
145°	2699	2697	2736	2752	2741	1688
155°	2972	2951	2979	2993	2974	1370
165°	3132	3118	3125	3141	3125	885
175°	3203	3187	3192	3208	3185	305
180°	3196	3196	3196	3196	3196	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2345.1	2345.1	2345.1	2345.1	2345.1
2.5°	2358.8	2347.5	2322.6	2345.1	2340.8
5°	2345.1	2336.3	2311.4	2329.3	2325.0
7.5°	2329.3	2315.9	2291.0	2309.3	2304.7
10°	2304.7	2288.9	2261.8	2279.8	2273.1
12.5°	2270.7	2257.4	2230.3	2241.5	2237.0
15°	2232.5	2219.0	2189.6	2198.7	2187.5
17.5°	2185.0	2171.7	2142.2	2153.5	2142.2
20°	2133.1	2119.8	2088.2	2094.9	2086.0
22.5°	2081.5	2061.1	2031.7	2031.7	2027.1
25°	2020.5	2002.5	1964.3	1968.6	1964.3
27.5°	1952.7	1937.0	1907.8	1901.1	1889.8
30°	1885.3	1867.1	1833.4	1826.7	1817.6
32.5°	1813.0	1799.7	1763.5	1749.9	1740.8
35°	1743.2	1720.7	1684.5	1670.9	1659.7
37.5°	1664.2	1643.9	1607.7	1592.0	1580.7
40°	1583.1	1564.9	1528.8	1508.7	1499.6
42.5°	1504.2	1486.0	1450.1	1427.4	1413.9
45°	1418.5	1402.7	1368.7	1344.1	1335.0
47.5°	1335.0	1319.2	1283.1	1258.2	1244.8
50°	1247.0	1235.7	1204.1	1172.6	1161.3
52.5°	1161.3	1145.6	1116.4	1091.5	1075.6
55°	1073.5	1059.9	1032.9	1005.8	994.5
57.5°	985.5	974.2	944.8	917.7	908.7
60°	897.4	888.5	857.0	832.2	825.4
62.5°	811.7	796.0	773.5	751.0	741.9
65°	724.0	710.3	687.9	667.5	656.3
67.5°	633.8	622.3	602.2	586.4	577.3
70°	550.3	541.2	520.8	505.1	496.2
72.5°	464.6	455.6	444.3	428.5	421.8
75°	378.8	374.4	362.9	349.6	354.1
77.5°	302.2	293.1	288.5	281.8	275.2
80°	225.6	223.3	218.7	212.0	207.4
82.5°	153.3	153.3	151.2	142.2	142.2
85°	92.4	90.2	88.1	81.1	79.0
87.5°	40.6	36.2	31.6	24.9	22.5
90°	2.2	27.7	46.1	57.9	62.3
92.5°	57.9	48.6	55.4	60.2	62.3
95°	150.2	73.9	90.1	101.9	99.4
97.5°	270.5	81.0	117.8	124.9	127.2
100°	409.5	92.6	131.8	150.2	154.9
102.5°	561.9	557.5	136.5	161.8	168.9
105°	703.1	772.6	141.2	166.4	175.8
107.5°	867.4	925.0	145.9	171.1	180.5
110°	1024.7	1073.1	404.8	173.6	182.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1172.8	1214.2	1174.9	178.0	185.1
115°	1329.8	1369.1	1427.1	356.2	189.8
117.5°	1466.4	1512.5	1552.0	1221.1	615.2
120°	1619.0	1653.6	1695.4	1723.1	1410.8
122.5°	1748.4	1785.5	1831.9	1845.6	1848.1
125°	1880.2	1910.5	1954.4	1970.6	1977.5
127.5°	2000.5	2032.9	2067.8	2090.8	2093.1
130°	2113.9	2151.0	2176.3	2201.8	2199.7
132.5°	2229.6	2259.8	2285.1	2305.9	2303.8
135°	2326.8	2363.9	2384.4	2407.9	2403.1
137.5°	2428.4	2456.2	2479.5	2502.6	2495.7
140°	2527.9	2546.5	2571.8	2592.6	2581.1
142.5°	2611.3	2627.5	2657.5	2675.9	2664.4
145°	2699.2	2696.7	2736.0	2752.3	2740.7
147.5°	2775.3	2768.5	2807.7	2819.3	2810.2
150°	2849.5	2833.3	2870.3	2884.1	2872.5
152.5°	2911.8	2893.4	2928.0	2942.0	2925.8
155°	2972.0	2951.3	2979.1	2992.8	2974.4
157.5°	3020.6	3002.1	3023.0	3039.2	3020.6
160°	3062.3	3048.3	3062.3	3076.0	3059.8
162.5°	3099.1	3085.4	3096.9	3113.1	3092.3
165°	3131.5	3117.8	3124.6	3140.8	3124.6
167.5°	3157.0	3143.1	3150.2	3166.4	3145.6
170°	3177.9	3163.9	3168.6	3184.8	3163.9
172.5°	3191.6	3177.9	3182.6	3198.8	3177.9
175°	3203.2	3187.0	3191.6	3207.9	3184.8
177.5°	3207.9	3191.6	3194.1	3210.3	3189.5
180°	3196.4	3196.4	3196.4	3196.4	3196.4

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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	7.90	8.67	8.94	9.72	11.14	7.45	8.22	8.50	9.27	10.69
	3H	9.55	10.24	10.61	11.30	12.74	9.06	9.75	10.12	10.81	12.25
	4H	10.14	10.79	11.21	11.86	13.30	9.65	10.30	10.71	11.36	12.81
	6H	10.54	11.14	11.62	12.21	13.67	10.04	10.64	11.12	11.71	13.17
	8H	10.64	11.22	11.72	12.30	13.75	10.14	10.71	11.22	11.80	13.25
	12H	10.69	11.23	11.78	12.31	13.79	10.18	10.72	11.27	11.80	13.28
4H	2H	8.35	9.00	9.42	10.06	11.51	7.99	8.65	9.07	9.71	11.15
	3H	10.21	10.75	11.29	11.84	13.30	9.80	10.35	10.88	11.44	12.90
	4H	10.92	11.42	12.01	12.50	13.98	10.50	11.00	11.59	12.08	13.56
	6H	11.44	11.87	12.53	12.97	14.44	11.00	11.43	12.10	12.54	14.01
	8H	11.59	11.99	12.68	13.08	14.57	11.15	11.55	12.25	12.65	14.14
	12H	11.66	12.02	12.77	13.13	14.62	11.21	11.57	12.32	12.68	14.18
8H	4H	11.11	11.51	12.21	12.61	14.10	10.74	11.14	11.83	12.23	13.72
	6H	11.74	12.08	12.86	13.21	14.70	11.36	11.69	12.48	12.83	14.32
	8H	11.97	12.26	13.09	13.38	14.88	11.57	11.87	12.70	12.98	14.49
	12H	12.10	12.35	13.23	13.47	15.01	11.69	11.94	12.82	13.06	14.60
12H	4H	11.09	11.46	12.21	12.57	14.06	10.73	11.09	11.84	12.20	13.69
	6H	11.77	12.06	12.90	13.18	14.69	11.40	11.69	12.53	12.81	14.32
	8H	12.01	12.27	13.14	13.39	14.93	11.63	11.89	12.76	13.01	14.55