

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: P929024

Luminaire Tested: DFN2DIP-HX4F0-090D110US935-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929024
REPORT IS A COMBINATION OF REPORTS P900955 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D110US935-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

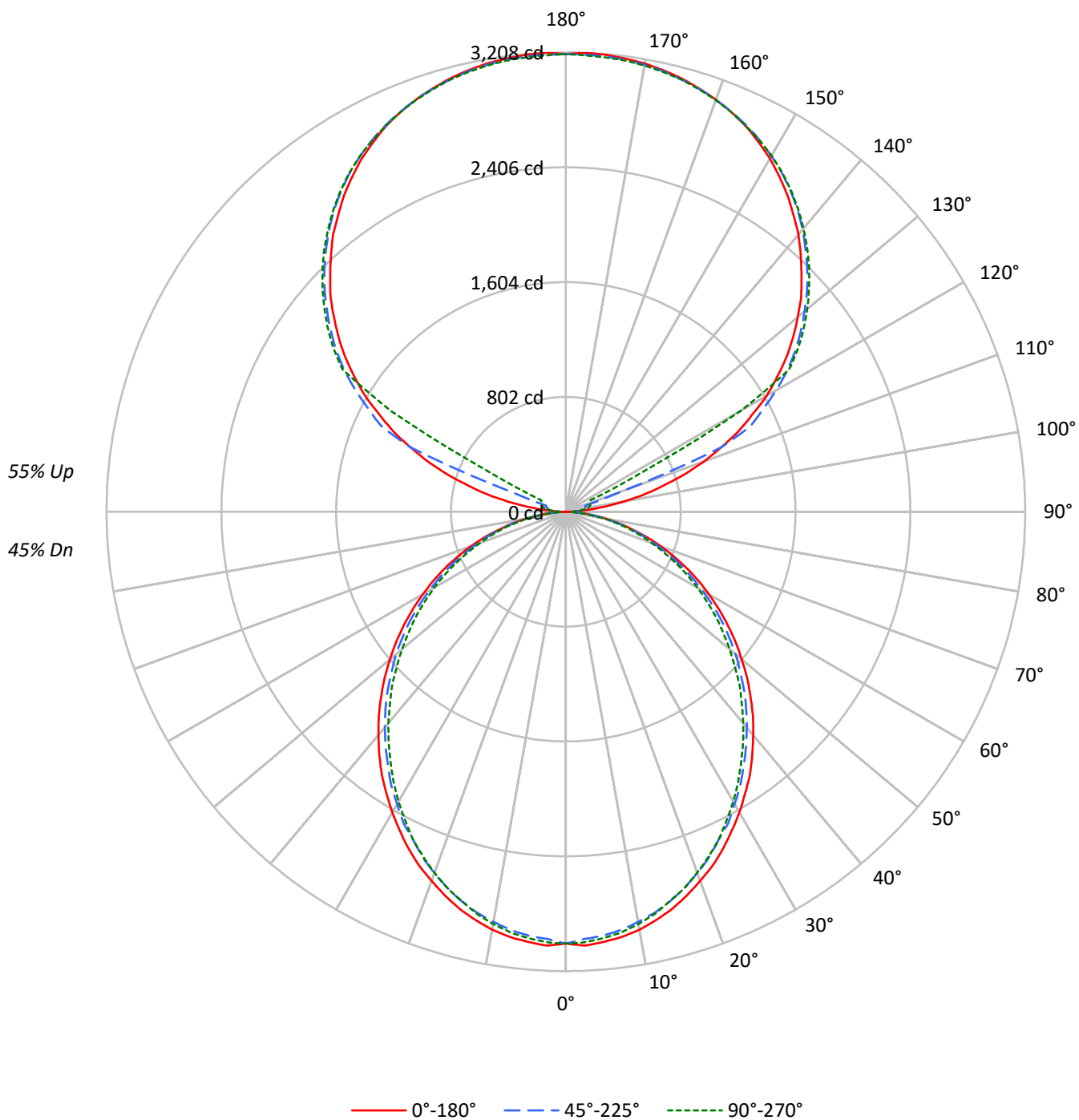
Lumens per Lamp: N/A
Luminaire Lumens: 17047.8 lumens
Efficiency: N/A
Efficacy: 96.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 175.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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	106	106	106	106	97	97	97	97	81	81	81	65	65	65	52	52	52
1	97	92	89	85	88	85	82	79	71	68	66	58	56	54	46	45	44
2	88	81	75	69	80	74	69	64	62	58	55	51	48	45	40	38	37
3	80	71	64	58	73	65	59	54	55	50	46	45	41	38	36	33	31
4	73	63	55	49	67	58	51	46	48	43	39	40	36	33	32	29	27
5	67	56	48	42	61	52	44	39	43	38	34	36	32	29	29	26	23
6	62	50	42	36	57	46	39	34	39	34	29	32	28	25	26	23	21
7	57	45	37	32	52	42	35	30	35	30	26	29	25	22	24	21	18
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	16
9	50	37	30	25	45	35	28	23	30	24	21	25	21	18	20	17	15
10	46	34	27	22	42	32	25	21	27	22	18	23	19	16	19	16	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2242	2242	2242
5°	2246	2211	2226
10°	2228	2181	2196
15°	2195	2146	2149
20°	2151	2096	2101
25°	2107	2037	2045
30°	2052	1981	1974
35°	2000	1916	1899
40°	1936	1850	1828
45°	1872	1784	1755
50°	1802	1715	1671
55°	1729	1634	1594
60°	1646	1539	1505
65°	1556	1441	1400
70°	1441	1321	1287
75°	1282	1177	1183
80°	1091	994	984
85°	791	677	655

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1872 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	283.8	1.7
10°-20°	798.5	4.7
20°-30°	1173.4	6.9
30°-40°	1362.9	8.0
40°-50°	1361.2	8.0
50°-60°	1186.9	7.0
60°-70°	877.4	5.1
70°-80°	496.4	2.9
80°-90°	136.6	0.8
90°-100°	105.4	0.6
100°-110°	392.9	2.3
110°-120°	1042.0	6.1
120°-130°	1728.3	10.1
130°-140°	1835.9	10.8
140°-150°	1706.2	10.0
150°-160°	1371.8	8.0
160°-170°	883.9	5.2
170°-180°	304.2	1.8
0°-30°	2255.7	13.2
0°-40°	3618.6	21.2
0°-60°	6166.7	36.2
0°-90°	7677.2	45.0
90°-120°	1540.3	9.0
90°-150°	6810.7	40.0
90°-180°	9371.0	55.0
0°-180°	17047.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3015	3015	3015	3015	3015	
5°	3015	3004	2972	2995	2989	286
15°	2870	2853	2815	2827	2812	808
25°	2598	2575	2526	2531	2526	1195
35°	2241	2212	2166	2148	2134	1400
45°	1824	1804	1760	1728	1716	1408
55°	1380	1363	1328	1293	1279	1234
65°	931	913	884	858	844	920
75°	487	481	467	449	455	520
85°	119	116	113	104	102	132
90°	2	28	46	58	62	16
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°	3015.1	3015.1	3015.1	3015.1	3015.1
2.5°	3032.7	3018.2	2986.3	3015.1	3009.6
5°	3015.1	3003.8	2971.8	2994.9	2989.3
7.5°	2994.9	2977.7	2945.7	2969.1	2963.2
10°	2963.2	2942.9	2908.1	2931.2	2922.6
12.5°	2919.5	2902.3	2867.6	2881.9	2876.2
15°	2870.3	2853.1	2815.2	2826.9	2812.5
17.5°	2809.4	2792.1	2754.3	2768.8	2754.3
20°	2742.6	2725.4	2684.8	2693.4	2682.0
22.5°	2676.2	2650.1	2612.2	2612.2	2606.3
25°	2597.7	2574.6	2525.5	2531.0	2525.5
27.5°	2510.7	2490.4	2452.9	2444.3	2429.8
30°	2424.0	2400.6	2357.2	2348.5	2336.9
32.5°	2331.1	2313.9	2267.4	2249.9	2238.2
35°	2241.3	2212.3	2165.8	2148.4	2133.9
37.5°	2139.8	2113.6	2067.1	2046.9	2032.4
40°	2035.4	2012.1	1965.6	1939.7	1928.1
42.5°	1933.9	1910.6	1864.4	1835.2	1818.0
45°	1823.8	1803.5	1759.8	1728.1	1716.5
47.5°	1716.5	1696.2	1649.7	1617.7	1600.5
50°	1603.3	1588.8	1548.2	1507.6	1493.1
52.5°	1493.1	1472.8	1435.3	1403.3	1383.0
55°	1380.3	1362.7	1327.9	1293.2	1278.8
57.5°	1267.0	1252.6	1214.8	1180.0	1168.3
60°	1153.8	1142.5	1101.8	1069.9	1061.3
62.5°	1043.7	1023.4	994.5	965.6	953.9
65°	930.8	913.3	884.3	858.2	843.8
67.5°	814.9	800.1	774.2	754.0	742.3
70°	707.5	695.8	669.7	649.4	638.0
72.5°	597.4	585.7	571.2	551.0	542.3
75°	487.0	481.4	466.7	449.4	455.3
77.5°	388.5	376.9	371.0	362.4	353.8
80°	290.1	287.0	281.1	272.5	266.7
82.5°	197.2	197.2	194.4	182.7	182.7
85°	118.7	116.0	113.2	104.3	101.5
87.5°	52.3	46.4	40.6	32.0	28.9
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°	1880.3	1910.5	1954.4	1970.6	1977.5
127.5°	2000.5	2032.9	2067.8	2090.9	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°	2326.9	2363.9	2384.5	2407.9	2403.1
137.5°	2428.5	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	2872.6
152.5°	2911.8	2893.4	2928.0	2942.0	2925.9
155°	2972.0	2951.3	2979.1	2992.8	2974.4
157.5°	3020.6	3002.1	3023.1	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	3124.7	3140.8	3124.7
167.5°	3157.0	3143.1	3150.2	3166.4	3145.6
170°	3178.0	3163.9	3168.6	3184.8	3163.9
172.5°	3191.6	3178.0	3182.6	3198.8	3178.0
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	9.60	10.42	10.60	11.43	12.77	9.17	9.99	10.17	11.00	12.34
	3H	11.26	11.99	12.27	13.01	14.37	10.79	11.52	11.79	12.54	13.90
	4H	11.84	12.54	12.87	13.56	14.93	11.37	12.07	12.39	13.09	14.46
	6H	12.24	12.88	13.28	13.91	15.29	11.77	12.41	12.80	13.43	14.82
	8H	12.35	12.96	13.38	14.00	15.38	11.87	12.48	12.91	13.52	14.90
	12H	12.39	12.97	13.44	14.01	15.41	11.91	12.49	12.96	13.53	14.93
4H	2H	10.06	10.75	11.09	11.77	13.14	9.71	10.41	10.74	11.43	12.80
	3H	11.92	12.50	12.96	13.55	14.93	11.53	12.11	12.56	13.16	14.54
	4H	12.63	13.17	13.68	14.21	15.61	12.23	12.76	13.27	13.80	15.21
	6H	13.15	13.60	14.20	14.67	16.07	12.74	13.19	13.79	14.26	15.66
	8H	13.30	13.72	14.35	14.78	16.20	12.88	13.31	13.94	14.37	15.78
	12H	13.37	13.75	14.44	14.83	16.25	12.95	13.33	14.02	14.40	15.82
8H	4H	12.83	13.25	13.88	14.31	15.73	12.47	12.89	13.52	13.95	15.37
	6H	13.46	13.81	14.54	14.91	16.32	13.10	13.45	14.17	14.55	15.96
	8H	13.68	13.99	14.77	15.07	16.51	13.31	13.62	14.40	14.70	16.14
	12H	13.81	14.08	14.90	15.16	16.63	13.43	13.70	14.51	14.78	16.25
12H	4H	12.81	13.20	13.88	14.27	15.69	12.46	12.85	13.53	13.92	15.34
	6H	13.49	13.80	14.57	14.88	16.31	13.14	13.45	14.22	14.53	15.96
	8H	13.73	14.00	14.82	15.08	16.55	13.37	13.64	14.46	14.72	16.20