

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: P928448

Luminaire Tested: DFN2DIP-HX4F0-110D110US927-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928448
REPORT IS A COMBINATION OF REPORTS P900959 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D110US927-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

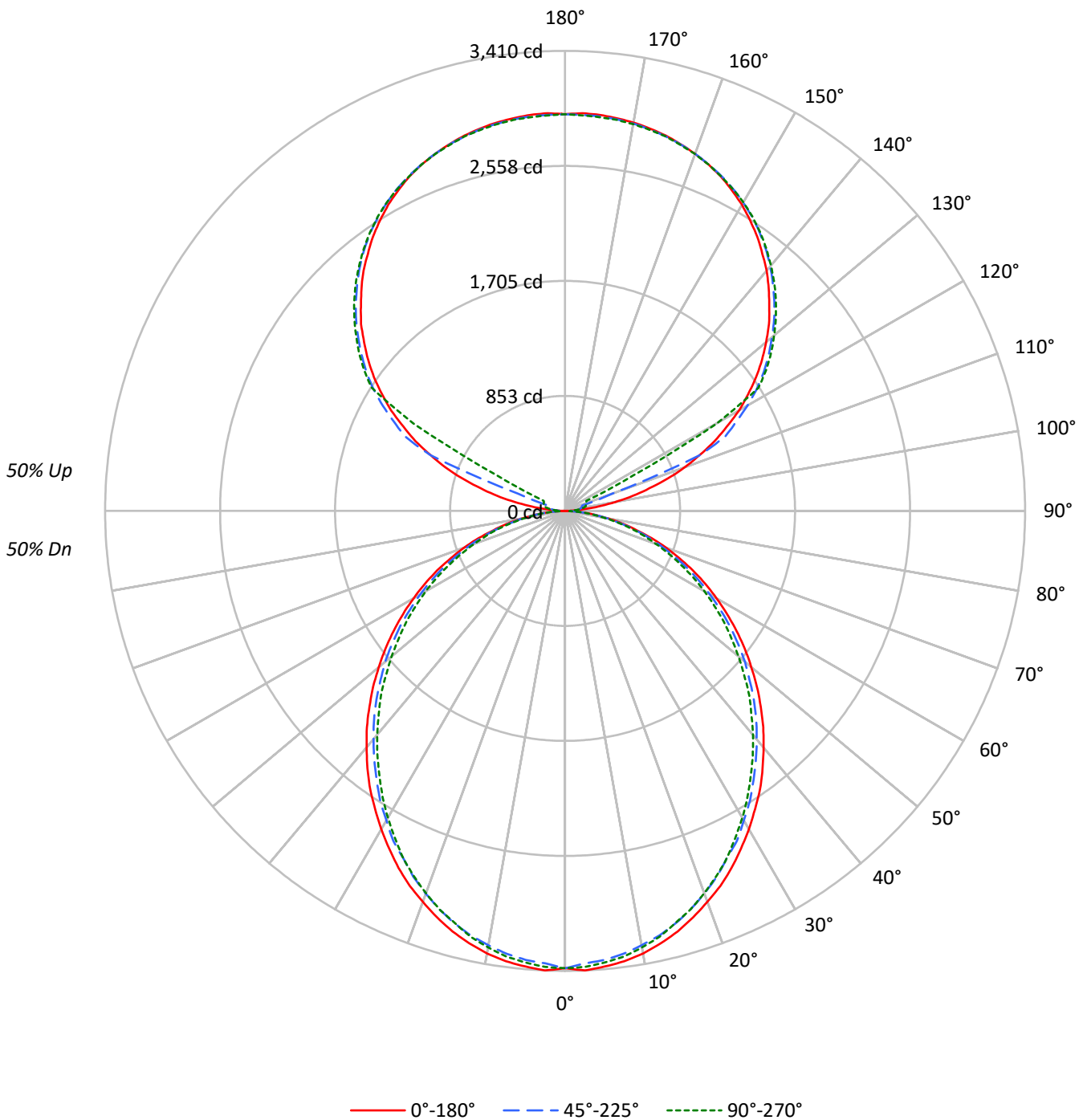
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17249.8 lumens
Efficiency: N/A
Efficacy: 86.5 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): 199.5
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			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°	2521	2521	2521
5°	2525	2486	2502
10°	2505	2452	2469
15°	2468	2412	2416
20°	2418	2357	2362
25°	2369	2290	2299
30°	2307	2227	2220
35°	2249	2154	2135
40°	2177	2080	2055
45°	2105	2006	1974
50°	2026	1928	1879
55°	1944	1838	1791
60°	1851	1731	1692
65°	1749	1620	1574
70°	1620	1485	1447
75°	1441	1323	1330
80°	1226	1117	1107
85°	890	762	736

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2105 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	319.1	1.8
10°-20°	897.7	5.2
20°-30°	1319.3	7.6
30°-40°	1532.2	8.9
40°-50°	1530.4	8.9
50°-60°	1334.4	7.7
60°-70°	986.4	5.7
70°-80°	558.1	3.2
80°-90°	152.5	0.9
90°-100°	96.9	0.6
100°-110°	361.4	2.1
110°-120°	958.5	5.6
120°-130°	1589.8	9.2
130°-140°	1688.7	9.8
140°-150°	1569.5	9.1
150°-160°	1261.8	7.3
160°-170°	813.1	4.7
170°-180°	279.9	1.6
0°-30°	2536.0	14.7
0°-40°	4068.3	23.6
0°-60°	6933.0	40.2
0°-90°	8630.1	50.0
90°-120°	1416.9	8.2
90°-150°	6264.9	36.3
90°-180°	8620.0	50.0
0°-180°	17249.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3390	3390	3390	3390	3390	
5°	3390	3377	3341	3367	3361	322
15°	3227	3208	3165	3178	3162	909
25°	2921	2895	2839	2846	2839	1344
35°	2520	2487	2435	2415	2399	1573
45°	2050	2028	1978	1943	1930	1582
55°	1552	1532	1493	1454	1438	1387
65°	1046	1027	994	965	949	1035
75°	547	541	525	505	512	584
85°	134	130	127	117	114	149
90°	2	26	42	53	57	16
95°	138	68	83	94	92	164
105°	647	711	130	153	162	691
115°	1223	1259	1313	328	175	1204
125°	1730	1757	1798	1813	1819	1543
135°	2140	2174	2193	2215	2211	1653
145°	2483	2481	2517	2532	2521	1553
155°	2734	2715	2740	2753	2736	1260
165°	2881	2868	2874	2889	2874	814
175°	2946	2932	2936	2951	2930	280
180°	2940	2940	2940	2940	2940	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3389.9	3389.9	3389.9	3389.9	3389.9
2.5°	3409.6	3393.3	3357.4	3389.9	3383.7
5°	3389.9	3377.1	3341.1	3367.0	3360.9
7.5°	3367.0	3347.7	3311.7	3338.0	3331.5
10°	3331.5	3308.6	3269.5	3295.4	3285.8
12.5°	3282.4	3263.0	3223.9	3240.2	3233.6
15°	3227.0	3207.6	3165.1	3178.2	3162.0
17.5°	3158.5	3139.2	3096.6	3112.9	3096.6
20°	3083.5	3064.1	3018.5	3028.1	3015.4
22.5°	3008.8	2979.3	2936.8	2936.8	2930.2
25°	2920.6	2894.7	2839.3	2845.6	2839.3
27.5°	2822.7	2799.9	2757.7	2748.0	2731.8
30°	2725.2	2698.9	2650.1	2640.4	2627.3
32.5°	2620.7	2601.4	2549.1	2529.4	2516.3
35°	2519.7	2487.3	2435.0	2415.3	2399.0
37.5°	2405.6	2376.2	2324.0	2301.2	2284.9
40°	2288.4	2262.1	2209.9	2180.9	2167.7
42.5°	2174.3	2148.0	2096.1	2063.2	2043.9
45°	2050.5	2027.6	1978.5	1942.9	1929.8
47.5°	1929.8	1907.0	1854.7	1818.7	1799.3
50°	1802.5	1786.3	1740.6	1695.0	1678.7
52.5°	1678.7	1655.8	1613.7	1577.7	1554.9
55°	1551.8	1532.0	1493.0	1453.9	1437.6
57.5°	1424.5	1408.3	1365.7	1326.6	1313.5
60°	1297.2	1284.5	1238.8	1202.8	1193.1
62.5°	1173.4	1150.6	1118.1	1085.6	1072.4
65°	1046.5	1026.7	994.3	964.9	948.7
67.5°	916.1	899.6	870.5	847.7	834.5
70°	795.4	782.3	752.9	730.1	717.2
72.5°	671.6	658.5	642.2	619.4	609.7
75°	547.4	541.3	524.6	505.3	511.9
77.5°	436.8	423.6	417.1	407.4	397.7
80°	326.1	322.7	316.1	306.4	299.9
82.5°	221.7	221.7	218.6	205.4	205.4
85°	133.5	130.4	127.3	117.2	114.1
87.5°	58.8	52.2	45.6	36.0	32.5
90°	2.1	25.5	42.5	53.3	57.3
92.5°	53.3	44.7	51.0	55.4	57.3
95°	138.2	68.0	82.8	93.7	91.5
97.5°	248.8	74.5	108.3	114.9	117.0
100°	376.7	85.1	121.3	138.2	142.5
102.5°	516.9	512.8	125.5	148.8	155.4
105°	646.7	710.7	129.9	153.1	161.7
107.5°	797.9	850.8	134.2	157.4	166.0
110°	942.6	987.1	372.4	159.7	168.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1078.8	1116.9	1080.8	163.7	170.3
115°	1223.2	1259.4	1312.7	327.7	174.6
117.5°	1348.9	1391.3	1427.7	1123.2	565.9
120°	1489.3	1521.1	1559.5	1585.0	1297.8
122.5°	1608.3	1642.4	1685.1	1697.7	1700.0
125°	1729.6	1757.4	1797.8	1812.7	1819.0
127.5°	1840.2	1870.0	1902.1	1923.3	1925.4
130°	1944.5	1978.7	2001.9	2025.4	2023.4
132.5°	2050.9	2078.7	2102.0	2121.1	2119.2
135°	2140.4	2174.4	2193.4	2214.9	2210.6
137.5°	2233.8	2259.3	2280.8	2302.0	2295.7
140°	2325.3	2342.4	2365.7	2384.9	2374.3
142.5°	2402.1	2416.9	2444.5	2461.5	2450.8
145°	2482.9	2480.6	2516.7	2531.7	2521.1
147.5°	2552.9	2546.6	2582.7	2593.3	2585.0
150°	2621.1	2606.2	2640.3	2653.0	2642.3
152.5°	2678.5	2661.5	2693.4	2706.3	2691.4
155°	2733.8	2714.8	2740.3	2753.0	2736.0
157.5°	2778.5	2761.5	2780.8	2795.7	2778.5
160°	2816.9	2804.0	2816.9	2829.5	2814.6
162.5°	2850.7	2838.1	2848.7	2863.6	2844.5
165°	2880.6	2867.9	2874.2	2889.1	2874.2
167.5°	2904.0	2891.2	2897.8	2912.7	2893.5
170°	2923.3	2910.4	2914.6	2929.6	2910.4
172.5°	2935.9	2923.3	2927.5	2942.4	2923.3
175°	2946.5	2931.6	2935.9	2950.8	2929.6
177.5°	2950.8	2935.9	2938.2	2953.1	2933.9
180°	2940.2	2940.2	2940.2	2940.2	2940.2



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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	10.49	11.35	11.44	12.32	13.59	10.06	10.92	11.01	11.89	13.16
	3H	12.15	12.92	13.12	13.90	15.20	11.68	12.45	12.64	13.43	14.72
	4H	12.74	13.47	13.72	14.45	15.76	12.26	13.00	13.25	13.98	15.28
	6H	13.14	13.81	14.13	14.80	16.12	12.66	13.34	13.65	14.33	15.64
	8H	13.24	13.88	14.24	14.89	16.20	12.77	13.41	13.77	14.42	15.73
	12H	13.29	13.90	14.30	14.90	16.24	12.81	13.42	13.81	14.42	15.76
4H	2H	10.95	11.68	11.94	12.67	13.97	10.61	11.34	11.59	12.32	13.62
	3H	12.82	13.43	13.81	14.44	15.76	12.42	13.03	13.42	14.05	15.36
	4H	13.53	14.09	14.54	15.10	16.44	13.13	13.68	14.13	14.69	16.03
	6H	14.05	14.53	15.07	15.56	16.90	13.64	14.12	14.66	15.15	16.49
	8H	14.20	14.65	15.22	15.67	17.02	13.79	14.24	14.80	15.26	16.61
	12H	14.27	14.68	15.31	15.72	17.07	13.85	14.26	14.89	15.29	16.65
8H	4H	13.73	14.18	14.75	15.20	16.55	13.37	13.82	14.39	14.84	16.19
	6H	14.36	14.73	15.40	15.80	17.15	14.00	14.37	15.04	15.44	16.79
	8H	14.58	14.91	15.63	15.96	17.33	14.21	14.54	15.26	15.59	16.96
	12H	14.72	15.00	15.77	16.05	17.46	14.33	14.62	15.39	15.66	17.08
12H	4H	13.72	14.12	14.75	15.16	16.52	13.36	13.77	14.40	14.81	16.16
	6H	14.39	14.72	15.44	15.77	17.14	14.04	14.37	15.09	15.42	16.79
	8H	14.64	14.92	15.69	15.97	17.38	14.28	14.57	15.33	15.61	17.02