

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: P928728

Luminaire Tested: DFN2DIP-HX4F0-100D090US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928728
REPORT IS A COMBINATION OF REPORTS P900921 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D090US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

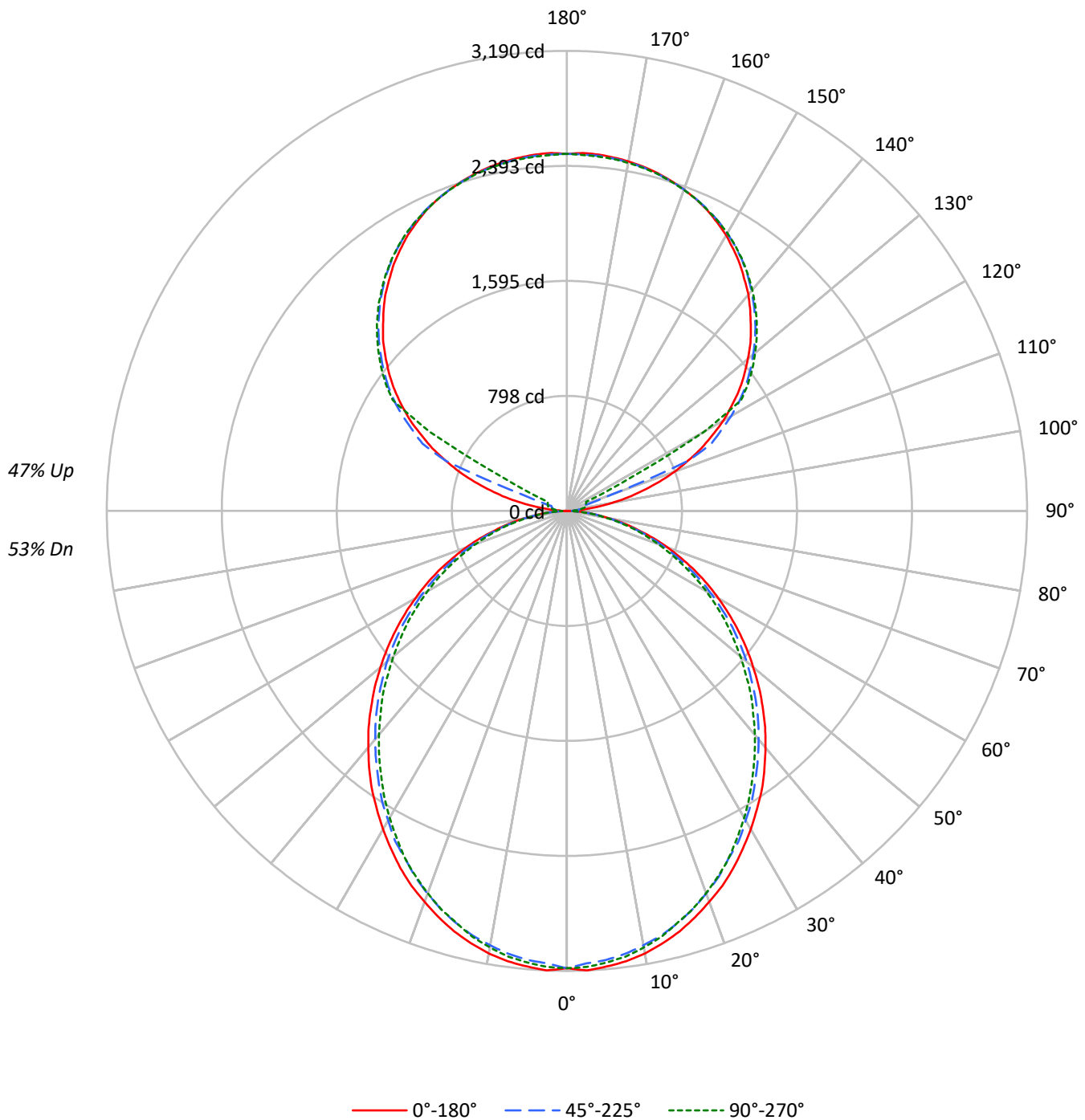
Lumens per Lamp: N/A
Luminaire Lumens: 15330.2 lumens
Efficiency: N/A
Efficacy: 91.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 167.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	59	59	59
1	98	94	90	87	91	87	84	81	74	72	70	63	61	59	52	51	49
2	90	82	76	71	83	76	71	66	65	61	58	55	52	50	46	44	42
3	82	72	65	59	75	67	61	55	58	53	49	49	45	42	40	38	35
4	75	64	56	50	69	59	52	47	51	46	41	43	39	36	36	33	31
5	69	57	49	43	63	53	46	40	46	40	36	39	35	31	33	29	27
6	63	51	43	37	58	48	40	35	41	35	31	35	31	27	30	26	23
7	59	46	38	33	54	43	36	31	37	32	27	32	28	24	27	24	21
8	54	42	34	29	50	39	32	27	34	28	24	29	25	22	25	21	19
9	51	38	31	26	47	36	29	24	31	26	22	27	23	19	23	19	17
10	47	35	28	23	44	33	26	22	29	23	20	25	21	18	21	18	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2358	2358	2358
5°	2362	2325	2341
10°	2343	2294	2309
15°	2309	2257	2260
20°	2262	2204	2209
25°	2216	2142	2151
30°	2158	2084	2076
35°	2104	2015	1998
40°	2036	1946	1923
45°	1969	1876	1846
50°	1895	1803	1757
55°	1818	1719	1676
60°	1731	1619	1582
65°	1637	1516	1472
70°	1516	1389	1354
75°	1348	1238	1244
80°	1147	1045	1035
85°	833	713	689

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 1969 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	298.5	1.9
10°-20°	839.8	5.5
20°-30°	1234.2	8.1
30°-40°	1433.4	9.4
40°-50°	1431.6	9.3
50°-60°	1248.3	8.1
60°-70°	922.8	6.0
70°-80°	522.1	3.4
80°-90°	142.2	0.9
90°-100°	81.6	0.5
100°-110°	304.3	2.0
110°-120°	807.0	5.3
120°-130°	1338.5	8.7
130°-140°	1421.8	9.3
140°-150°	1321.4	8.6
150°-160°	1062.4	6.9
160°-170°	684.6	4.5
170°-180°	235.6	1.5
0°-30°	2372.4	15.5
0°-40°	3805.8	24.8
0°-60°	6485.8	42.3
0°-90°	8072.9	52.7
90°-120°	1193.0	7.8
90°-150°	5274.7	34.4
90°-180°	7257.0	47.3
0°-180°	15330.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3171	3171	3171	3171	3171	
5°	3171	3159	3126	3150	3144	301
15°	3019	3001	2961	2973	2958	850
25°	2732	2708	2656	2662	2656	1257
35°	2357	2327	2278	2260	2244	1472
45°	1918	1897	1851	1818	1805	1480
55°	1452	1433	1397	1360	1345	1298
65°	979	961	930	903	888	968
75°	512	506	491	473	479	547
85°	125	122	119	110	107	139
90°	2	22	36	45	48	14
95°	116	57	70	79	77	138
105°	544	598	109	129	136	582
115°	1030	1060	1105	276	147	1014
125°	1456	1480	1514	1526	1532	1299
135°	1802	1831	1847	1865	1861	1392
145°	2090	2088	2119	2132	2123	1307
155°	2302	2286	2307	2318	2304	1061
165°	2425	2415	2420	2432	2420	685
175°	2481	2468	2472	2484	2466	236
180°	2476	2476	2476	2476	2476	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3171.2	3171.2	3171.2	3171.2	3171.2
2.5°	3189.7	3174.4	3140.8	3171.2	3165.4
5°	3171.2	3159.3	3125.6	3149.9	3144.0
7.5°	3149.9	3131.7	3098.1	3122.7	3116.6
10°	3116.6	3095.2	3058.6	3082.9	3073.9
12.5°	3070.6	3052.5	3015.9	3031.1	3025.0
15°	3018.8	3000.7	2960.9	2973.2	2958.0
17.5°	2954.8	2936.7	2896.8	2912.1	2896.8
20°	2884.5	2866.4	2823.7	2832.8	2820.8
22.5°	2814.7	2787.2	2747.4	2747.4	2741.3
25°	2732.2	2707.9	2656.2	2662.0	2656.2
27.5°	2640.6	2619.2	2579.8	2570.8	2555.5
30°	2549.4	2524.8	2479.1	2470.1	2457.8
32.5°	2451.7	2433.6	2384.7	2366.3	2354.0
35°	2357.2	2326.8	2277.9	2259.5	2244.3
37.5°	2250.5	2222.9	2174.1	2152.7	2137.5
40°	2140.8	2116.1	2067.3	2040.2	2027.9
42.5°	2034.0	2009.4	1960.9	1930.2	1912.1
45°	1918.2	1896.8	1850.9	1817.5	1805.3
47.5°	1805.3	1784.0	1735.1	1701.4	1683.3
50°	1686.2	1671.0	1628.3	1585.6	1570.4
52.5°	1570.4	1549.1	1509.5	1476.0	1454.6
55°	1451.7	1433.3	1396.7	1360.1	1344.9
57.5°	1332.6	1317.4	1277.6	1241.1	1228.8
60°	1213.5	1201.6	1158.8	1125.2	1116.1
62.5°	1097.7	1076.4	1046.0	1015.6	1003.3
65°	979.0	960.6	930.2	902.6	887.5
67.5°	857.1	841.5	814.3	793.0	780.7
70°	744.1	731.8	704.3	683.0	671.0
72.5°	628.3	616.0	600.8	579.5	570.3
75°	512.1	506.4	490.8	472.7	478.8
77.5°	408.6	396.3	390.1	381.1	372.0
80°	305.1	301.9	295.7	286.6	280.5
82.5°	207.4	207.4	204.5	192.2	192.2
85°	124.9	122.0	119.1	109.7	106.8
87.5°	55.0	48.8	42.7	33.7	30.4
90°	1.7	21.5	35.7	44.9	48.2
92.5°	44.9	37.7	43.0	46.6	48.2
95°	116.4	57.2	69.8	78.9	77.0
97.5°	209.5	62.8	91.3	96.7	98.5
100°	317.1	71.7	102.1	116.4	120.0
102.5°	435.2	431.8	105.7	125.3	130.8
105°	544.5	598.4	109.3	128.9	136.1
107.5°	671.7	716.4	113.0	132.5	139.8
110°	793.6	831.1	313.5	134.4	141.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	908.2	940.3	909.9	137.8	143.4
115°	1029.9	1060.3	1105.2	275.9	146.9
117.5°	1135.6	1171.4	1202.0	945.7	476.4
120°	1253.9	1280.7	1313.0	1334.5	1092.7
122.5°	1354.1	1382.8	1418.8	1429.3	1431.3
125°	1456.2	1479.6	1513.6	1526.2	1531.5
127.5°	1549.3	1574.4	1601.5	1619.3	1621.0
130°	1637.2	1665.9	1685.5	1705.2	1703.6
132.5°	1726.7	1750.1	1769.7	1785.9	1784.2
135°	1802.0	1830.7	1846.7	1864.8	1861.2
137.5°	1880.8	1902.2	1920.3	1938.2	1932.9
140°	1957.7	1972.2	1991.8	2007.9	1999.0
142.5°	2022.4	2035.0	2058.1	2072.4	2063.5
145°	2090.5	2088.5	2119.0	2131.6	2122.6
147.5°	2149.4	2144.1	2174.5	2183.5	2176.4
150°	2206.9	2194.3	2223.0	2233.6	2224.7
152.5°	2255.1	2240.8	2267.7	2278.5	2265.9
155°	2301.7	2285.7	2307.2	2317.9	2303.6
157.5°	2339.4	2325.1	2341.3	2353.8	2339.4
160°	2371.6	2360.8	2371.6	2382.3	2369.8
162.5°	2400.2	2389.5	2398.5	2411.0	2394.9
165°	2425.3	2414.6	2420.0	2432.5	2420.0
167.5°	2445.1	2434.2	2439.7	2452.3	2436.1
170°	2461.2	2450.4	2454.0	2466.5	2450.4
172.5°	2471.9	2461.2	2464.8	2477.4	2461.2
175°	2480.8	2468.2	2471.9	2484.4	2466.5
177.5°	2484.4	2471.9	2473.8	2486.3	2470.2
180°	2475.5	2475.5	2475.5	2475.5	2475.5

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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	10.50	11.38	11.43	12.33	13.57	10.06	10.95	11.00	11.90	13.13
	3H	12.16	12.95	13.10	13.91	15.17	11.69	12.48	12.63	13.44	14.70
	4H	12.75	13.50	13.71	14.47	15.73	12.27	13.03	13.23	13.99	15.26
	6H	13.15	13.84	14.12	14.81	16.09	12.67	13.37	13.65	14.34	15.62
	8H	13.26	13.92	14.23	14.90	16.18	12.78	13.44	13.76	14.43	15.70
	12H	13.31	13.93	14.29	14.91	16.21	12.82	13.45	13.81	14.43	15.73
4H	2H	10.96	11.71	11.93	12.68	13.94	10.62	11.37	11.58	12.33	13.60
	3H	12.83	13.46	13.81	14.45	15.73	12.44	13.07	13.41	14.06	15.34
	4H	13.55	14.12	14.53	15.11	16.41	13.14	13.71	14.13	14.70	16.01
	6H	14.06	14.56	15.06	15.57	16.87	13.65	14.15	14.65	15.16	16.46
	8H	14.22	14.68	15.21	15.68	17.00	13.80	14.26	14.80	15.27	16.58
	12H	14.29	14.71	15.31	15.73	17.05	13.87	14.28	14.88	15.31	16.63
8H	4H	13.75	14.21	14.74	15.21	16.53	13.39	13.85	14.38	14.85	16.17
	6H	14.38	14.76	15.40	15.81	17.12	14.02	14.40	15.04	15.45	16.76
	8H	14.60	14.94	15.63	15.97	17.30	14.23	14.57	15.26	15.60	16.93
	12H	14.74	15.03	15.77	16.06	17.44	14.35	14.65	15.38	15.67	17.05
12H	4H	13.73	14.15	14.75	15.17	16.49	13.38	13.80	14.40	14.82	16.14
	6H	14.41	14.75	15.44	15.78	17.11	14.06	14.40	15.09	15.43	16.76
	8H	14.65	14.95	15.69	15.98	17.35	14.30	14.59	15.33	15.62	17.00