

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: P928692

Luminaire Tested: DFN2DIP-HX4F0-090D090US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928692
REPORT IS A COMBINATION OF REPORTS P900919 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D090US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

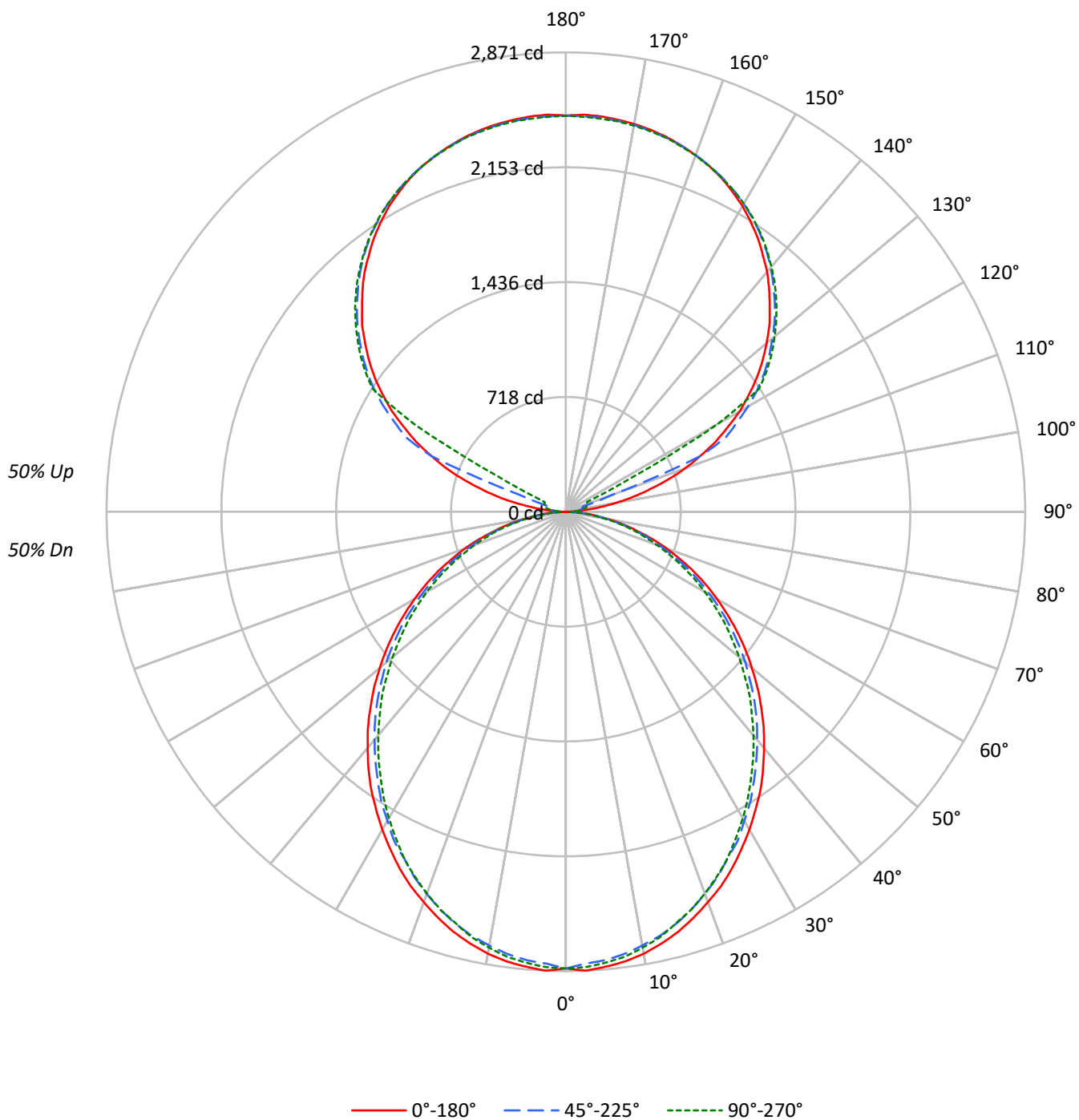
Lumens per Lamp: N/A
Luminaire Lumens: 14523.3 lumens
Efficiency: N/A
Efficacy: 92.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 156.6
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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56
1	98	93	90	86	90	86	83	80	73	71	68	61	59	58	50	48	47
2	89	82	75	70	82	76	70	66	64	60	57	53	51	48	44	42	40
3	81	72	64	59	75	66	60	55	56	52	48	47	44	41	39	36	34
4	74	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	29
5	68	57	48	42	63	53	45	40	45	39	35	38	34	30	31	28	26
6	63	51	43	37	58	47	40	35	40	35	31	34	30	27	28	25	23
7	58	46	38	32	53	43	36	30	37	31	27	31	27	23	26	23	20
8	54	42	34	29	50	39	32	27	33	28	24	28	24	21	24	20	18
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	19	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2122	2122	2122
5°	2126	2093	2107
10°	2109	2065	2078
15°	2078	2031	2034
20°	2036	1984	1988
25°	1995	1928	1936
30°	1943	1875	1869
35°	1893	1814	1798
40°	1833	1751	1731
45°	1772	1689	1662
50°	1706	1623	1582
55°	1637	1547	1508
60°	1558	1457	1424
65°	1473	1364	1325
70°	1364	1250	1218
75°	1214	1114	1120
80°	1033	941	932
85°	749	641	620

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1772 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	268.6	1.8
10°-20°	755.8	5.2
20°-30°	1110.7	7.6
30°-40°	1290.1	8.9
40°-50°	1288.5	8.9
50°-60°	1123.5	7.7
60°-70°	830.5	5.7
70°-80°	469.9	3.2
80°-90°	128.4	0.9
90°-100°	81.6	0.6
100°-110°	304.3	2.1
110°-120°	807.0	5.6
120°-130°	1338.5	9.2
130°-140°	1421.8	9.8
140°-150°	1321.4	9.1
150°-160°	1062.4	7.3
160°-170°	684.6	4.7
170°-180°	235.6	1.6
0°-30°	2135.2	14.7
0°-40°	3425.3	23.6
0°-60°	5837.3	40.2
0°-90°	7266.0	50.0
90°-120°	1193.0	8.2
90°-150°	5274.7	36.3
90°-180°	7257.0	50.0
0°-180°	14523.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2854	2854	2854	2854	2854	
5°	2854	2843	2813	2835	2830	271
15°	2717	2701	2665	2676	2662	765
25°	2459	2437	2391	2396	2391	1131
35°	2122	2094	2050	2034	2020	1325
45°	1726	1707	1666	1636	1625	1332
55°	1306	1290	1257	1224	1210	1168
65°	881	864	837	812	799	871
75°	461	456	442	425	431	492
85°	112	110	107	99	96	125
90°	2	22	36	45	48	13
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°	2854.0	2854.0	2854.0	2854.0	2854.0
2.5°	2870.7	2857.0	2826.7	2854.0	2848.8
5°	2854.0	2843.3	2813.1	2834.9	2829.6
7.5°	2834.9	2818.6	2788.3	2810.4	2804.9
10°	2804.9	2785.7	2752.7	2774.6	2766.4
12.5°	2763.5	2747.2	2714.4	2728.0	2722.5
15°	2717.0	2700.7	2664.8	2675.9	2662.2
17.5°	2659.3	2643.0	2607.2	2620.9	2607.2
20°	2596.1	2579.8	2541.3	2549.5	2538.7
22.5°	2533.2	2508.5	2472.6	2472.6	2467.1
25°	2458.9	2437.1	2390.6	2395.8	2390.6
27.5°	2376.5	2357.3	2321.9	2313.7	2300.0
30°	2294.5	2272.3	2231.2	2223.1	2212.1
32.5°	2206.5	2190.2	2146.2	2129.7	2118.6
35°	2121.5	2094.1	2050.1	2033.6	2019.9
37.5°	2025.4	2000.7	1956.7	1937.5	1923.8
40°	1926.7	1904.6	1860.6	1836.1	1825.1
42.5°	1830.6	1808.5	1764.8	1737.2	1720.9
45°	1726.3	1707.2	1665.8	1635.8	1624.8
47.5°	1624.8	1605.6	1561.5	1531.3	1515.0
50°	1517.6	1503.9	1465.5	1427.1	1413.4
52.5°	1413.4	1394.1	1358.6	1328.4	1309.1
55°	1306.5	1289.9	1257.0	1224.1	1210.4
57.5°	1199.4	1185.7	1149.9	1117.0	1105.9
60°	1092.2	1081.4	1043.0	1012.7	1004.6
62.5°	987.9	968.7	941.3	914.0	902.9
65°	881.1	864.5	837.1	812.4	798.7
67.5°	771.3	757.4	732.8	713.7	702.6
70°	669.7	658.6	633.9	614.7	603.9
72.5°	565.4	554.4	540.7	521.5	513.4
75°	461.0	455.7	441.7	425.4	431.0
77.5°	367.7	356.7	351.2	343.0	334.9
80°	274.6	271.6	266.1	257.9	252.5
82.5°	186.6	186.6	184.0	172.9	172.9
85°	112.4	109.8	107.2	98.7	96.1
87.5°	49.5	43.9	38.5	30.3	27.4
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	9.89	10.75	10.85	11.72	12.99	9.46	10.32	10.42	11.29	12.56
	3H	11.55	12.32	12.52	13.31	14.60	11.08	11.85	12.05	12.83	14.13
	4H	12.14	12.87	13.12	13.86	15.16	11.67	12.40	12.65	13.38	14.68
	6H	12.54	13.21	13.53	14.20	15.52	12.06	12.74	13.06	13.73	15.04
	8H	12.65	13.29	13.64	14.29	15.61	12.17	12.81	13.17	13.82	15.13
	12H	12.69	13.30	13.70	14.31	15.64	12.21	12.82	13.22	13.82	15.16
4H	2H	10.35	11.08	11.34	12.07	13.37	10.01	10.74	11.00	11.72	13.03
	3H	12.22	12.83	13.22	13.84	15.16	11.83	12.44	12.82	13.45	14.77
	4H	12.93	13.49	13.94	14.50	15.84	12.53	13.09	13.53	14.09	15.43
	6H	13.45	13.93	14.47	14.96	16.30	13.04	13.52	14.06	14.55	15.89
	8H	13.60	14.05	14.62	15.07	16.42	13.19	13.64	14.21	14.66	16.01
	12H	13.67	14.08	14.71	15.12	16.48	13.25	13.66	14.29	14.70	16.05
8H	4H	13.13	13.58	14.15	14.61	15.96	12.77	13.22	13.79	14.24	15.60
	6H	13.76	14.14	14.81	15.20	16.55	13.40	13.77	14.44	14.84	16.19
	8H	13.99	14.31	15.04	15.36	16.73	13.62	13.94	14.67	14.99	16.36
	12H	14.12	14.41	15.17	15.45	16.86	13.73	14.02	14.79	15.07	16.48
12H	4H	13.12	13.52	14.15	14.56	15.92	12.77	13.17	13.80	14.21	15.57
	6H	13.79	14.12	14.84	15.17	16.54	13.44	13.77	14.49	14.82	16.19
	8H	14.04	14.33	15.09	15.37	16.78	13.68	13.97	14.73	15.01	16.42