

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: P928756

Luminaire Tested: DFN2DIP-HX4F0-110D070US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928756
REPORT IS A COMBINATION OF REPORTS P900887 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D070US930-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

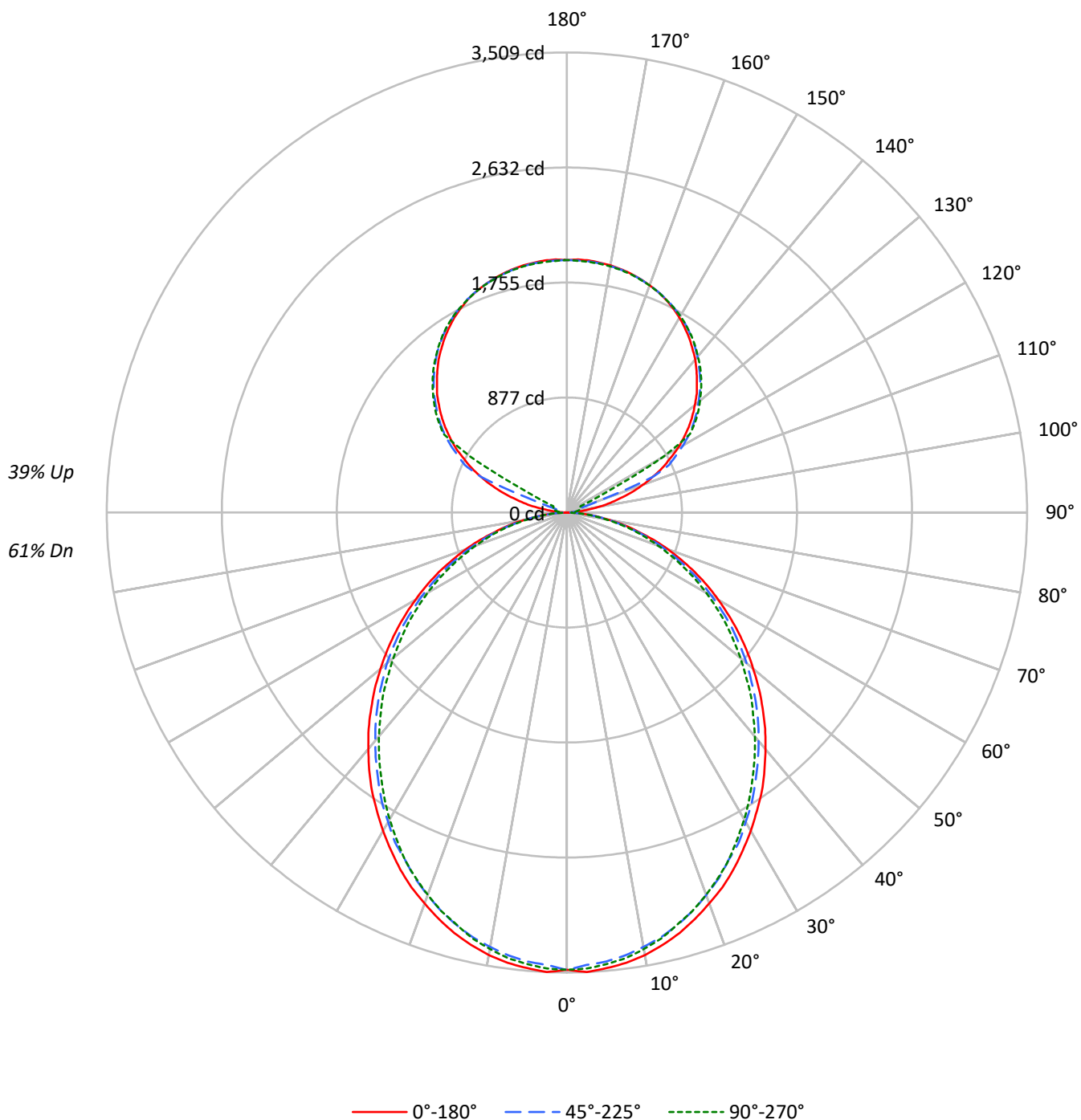
Lumens per Lamp: N/A
Luminaire Lumens: 14523.3 lumens
Efficiency: N/A
Efficacy: 88.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 164.3
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	110	110	110	110	103	103	103	103	90	90	90	77	77	77	66	66	66
1	100	96	92	88	94	90	86	83	79	76	74	68	66	65	59	57	56
2	91	84	77	72	85	79	73	68	69	65	61	60	57	54	52	49	47
3	83	74	66	60	78	69	63	57	61	56	51	53	49	46	46	43	40
4	76	65	57	51	71	61	54	49	54	48	44	47	43	39	41	38	35
5	70	58	50	44	65	55	47	42	48	42	38	42	38	34	37	33	30
6	65	52	44	38	60	49	42	36	44	38	33	38	34	30	34	30	27
7	60	47	39	33	56	45	37	32	40	34	29	35	30	26	31	27	24
8	56	43	35	30	52	41	33	28	36	30	26	32	27	24	28	24	21
9	52	39	32	27	48	37	30	25	33	27	23	30	25	21	26	22	19
10	48	36	29	24	45	34	28	23	31	25	21	27	23	19	24	20	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2594	2594	2594
5°	2598	2558	2575
10°	2577	2524	2540
15°	2540	2482	2486
20°	2489	2425	2430
25°	2438	2356	2366
30°	2374	2292	2284
35°	2314	2217	2197
40°	2240	2140	2115
45°	2166	2064	2031
50°	2085	1984	1933
55°	2000	1891	1843
60°	1904	1781	1741
65°	1800	1667	1619
70°	1667	1528	1489
75°	1483	1362	1369
80°	1262	1150	1139
85°	916	784	757

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2166 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	328.3	2.3
10°-20°	923.8	6.4
20°-30°	1357.6	9.3
30°-40°	1576.7	10.9
40°-50°	1574.8	10.8
50°-60°	1373.2	9.5
60°-70°	1015.1	7.0
70°-80°	574.3	4.0
80°-90°	155.0	1.1
90°-100°	63.5	0.4
100°-110°	236.7	1.6
110°-120°	627.7	4.3
120°-130°	1041.1	7.2
130°-140°	1105.9	7.6
140°-150°	1027.8	7.1
150°-160°	826.3	5.7
160°-170°	532.4	3.7
170°-180°	183.3	1.3
0°-30°	2609.7	18.0
0°-40°	4186.4	28.8
0°-60°	7134.4	49.1
0°-90°	8878.8	61.1
90°-120°	927.9	6.4
90°-150°	4102.6	28.2
90°-180°	5645.0	38.9
0°-180°	14523.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3488	3488	3488	3488	3488	
5°	3488	3475	3438	3465	3458	331
15°	3321	3301	3257	3270	3254	935
25°	3005	2979	2922	2928	2922	1383
35°	2593	2560	2506	2485	2469	1619
45°	2110	2086	2036	1999	1986	1628
55°	1597	1576	1536	1496	1479	1428
65°	1077	1057	1023	993	976	1065
75°	563	557	540	520	527	601
85°	137	134	131	121	117	153
90°	1	17	28	35	38	13
95°	90	44	54	61	60	107
105°	424	465	85	100	106	453
115°	801	825	860	215	114	789
125°	1133	1151	1177	1187	1191	1010
135°	1402	1424	1436	1450	1448	1083
145°	1626	1624	1648	1658	1651	1017
155°	1790	1778	1794	1803	1792	825
165°	1886	1878	1882	1892	1882	533
175°	1930	1920	1923	1932	1918	184
180°	1925	1925	1925	1925	1925	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3488.4	3488.4	3488.4	3488.4	3488.4
2.5°	3508.6	3491.9	3454.9	3488.4	3481.9
5°	3488.4	3475.2	3438.2	3464.8	3458.5
7.5°	3464.8	3444.9	3407.9	3435.0	3428.2
10°	3428.2	3404.7	3364.5	3391.1	3381.2
12.5°	3377.7	3357.7	3317.5	3334.2	3327.5
15°	3320.7	3300.8	3257.0	3270.5	3253.8
17.5°	3250.2	3230.3	3186.6	3203.3	3186.6
20°	3173.0	3153.1	3106.1	3116.1	3102.9
22.5°	3096.2	3065.9	3022.1	3022.1	3015.3
25°	3005.4	2978.7	2921.8	2928.2	2921.8
27.5°	2904.7	2881.2	2837.7	2827.8	2811.1
30°	2804.3	2777.3	2727.1	2717.1	2703.6
32.5°	2696.8	2676.9	2623.2	2602.9	2589.3
35°	2592.9	2559.5	2505.7	2485.4	2468.7
37.5°	2475.5	2445.2	2391.5	2368.0	2351.3
40°	2354.9	2327.8	2274.1	2244.2	2230.7
42.5°	2237.4	2210.4	2157.0	2123.2	2103.3
45°	2110.0	2086.5	2036.0	1999.4	1985.8
47.5°	1985.8	1962.4	1908.6	1871.6	1851.6
50°	1854.9	1838.2	1791.1	1744.2	1727.5
52.5°	1727.5	1703.9	1660.6	1623.5	1600.0
55°	1596.8	1576.5	1536.4	1496.1	1479.4
57.5°	1465.9	1449.2	1405.4	1365.1	1351.6
60°	1334.9	1321.8	1274.7	1237.7	1227.8
62.5°	1207.5	1184.0	1150.5	1117.1	1103.6
65°	1076.9	1056.6	1023.2	992.9	976.2
67.5°	942.7	925.7	895.8	872.3	858.8
70°	818.5	805.0	774.7	751.3	738.1
72.5°	691.1	677.6	660.9	637.4	627.4
75°	563.3	557.0	539.9	520.0	526.7
77.5°	449.5	435.9	429.2	419.2	409.3
80°	335.6	332.0	325.3	315.3	308.6
82.5°	228.1	228.1	224.9	211.4	211.4
85°	137.4	134.1	131.0	120.6	117.4
87.5°	60.5	53.7	46.9	37.0	33.4
90°	1.3	16.7	27.8	34.9	37.6
92.5°	34.9	29.3	33.4	36.3	37.6
95°	90.5	44.5	54.3	61.4	59.9
97.5°	162.9	48.8	71.0	75.3	76.6
100°	246.7	55.7	79.4	90.5	93.3
102.5°	338.5	335.9	82.2	97.5	101.7
105°	423.6	465.4	85.0	100.2	105.9
107.5°	522.4	557.2	87.9	103.1	108.7
110°	617.3	646.4	243.8	104.6	110.0

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	706.4	731.4	707.7	107.2	111.5
115°	801.1	824.7	859.6	214.6	114.3
117.5°	883.3	911.1	934.9	735.5	370.6
120°	975.2	996.1	1021.3	1038.0	849.9
122.5°	1053.1	1075.5	1103.5	1111.7	1113.2
125°	1132.6	1150.8	1177.3	1187.0	1191.1
127.5°	1205.1	1224.5	1245.6	1259.5	1260.8
130°	1273.4	1295.7	1310.9	1326.3	1325.0
132.5°	1343.0	1361.2	1376.5	1389.0	1387.7
135°	1401.6	1423.9	1436.4	1450.4	1447.6
137.5°	1462.8	1479.6	1493.6	1507.5	1503.3
140°	1522.7	1533.9	1549.2	1561.7	1554.8
142.5°	1572.9	1582.7	1600.7	1611.8	1604.9
145°	1625.9	1624.5	1648.1	1657.9	1650.9
147.5°	1671.7	1667.7	1691.3	1698.2	1692.8
150°	1716.4	1706.7	1729.0	1737.3	1730.3
152.5°	1754.0	1742.9	1763.7	1772.1	1762.4
155°	1790.2	1777.8	1794.5	1802.8	1791.7
157.5°	1819.5	1808.4	1821.0	1830.7	1819.5
160°	1844.7	1836.2	1844.7	1852.9	1843.1
162.5°	1866.8	1858.5	1865.5	1875.2	1862.7
165°	1886.3	1878.1	1882.2	1891.9	1882.2
167.5°	1901.7	1893.2	1897.6	1907.3	1894.8
170°	1914.3	1905.9	1908.6	1918.4	1905.9
172.5°	1922.6	1914.3	1917.1	1926.8	1914.3
175°	1929.5	1919.7	1922.6	1932.3	1918.4
177.5°	1932.3	1922.6	1924.1	1933.8	1921.2
180°	1925.4	1925.4	1925.4	1925.4	1925.4

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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	11.55	12.52	12.41	13.40	14.50	11.12	12.09	11.98	12.97	14.07
	3H	13.22	14.09	14.09	14.98	16.11	12.75	13.62	13.62	14.51	15.64
	4H	13.82	14.64	14.70	15.53	16.67	13.34	14.17	14.23	15.06	16.20
	6H	14.22	14.98	15.12	15.88	17.03	13.75	14.51	14.64	15.41	16.56
	8H	14.33	15.05	15.23	15.97	17.12	13.85	14.58	14.76	15.50	16.65
	12H	14.38	15.07	15.29	15.98	17.16	13.90	14.59	14.81	15.50	16.68
4H	2H	12.03	12.85	12.92	13.75	14.88	11.68	12.51	12.57	13.40	14.54
	3H	13.91	14.59	14.80	15.52	16.67	13.51	14.20	14.41	15.12	16.28
	4H	14.62	15.25	15.54	16.17	17.35	14.22	14.85	15.13	15.77	16.95
	6H	15.15	15.69	16.07	16.63	17.81	14.74	15.28	15.66	16.22	17.40
	8H	15.30	15.81	16.23	16.74	17.94	14.89	15.39	15.82	16.33	17.53
	12H	15.38	15.84	16.33	16.79	17.99	14.96	15.41	15.90	16.37	17.57
8H	4H	14.83	15.34	15.76	16.28	17.47	14.47	14.98	15.40	15.91	17.11
	6H	15.47	15.89	16.42	16.87	18.06	15.11	15.52	16.06	16.50	17.70
	8H	15.69	16.06	16.65	17.03	18.24	15.32	15.69	16.29	16.66	17.87
	12H	15.83	16.15	16.80	17.12	18.38	15.44	15.77	16.41	16.73	17.99
12H	4H	14.82	15.28	15.77	16.23	17.44	14.47	14.93	15.42	15.88	17.08
	6H	15.50	15.87	16.46	16.84	18.05	15.15	15.52	16.11	16.49	17.70
	8H	15.75	16.07	16.71	17.04	18.30	15.39	15.72	16.36	16.68	17.94