

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: P928440

Luminaire Tested: DFN2DIP-HX4F0-110D090US927-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928440
REPORT IS A COMBINATION OF REPORTS P900923 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D090US927-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

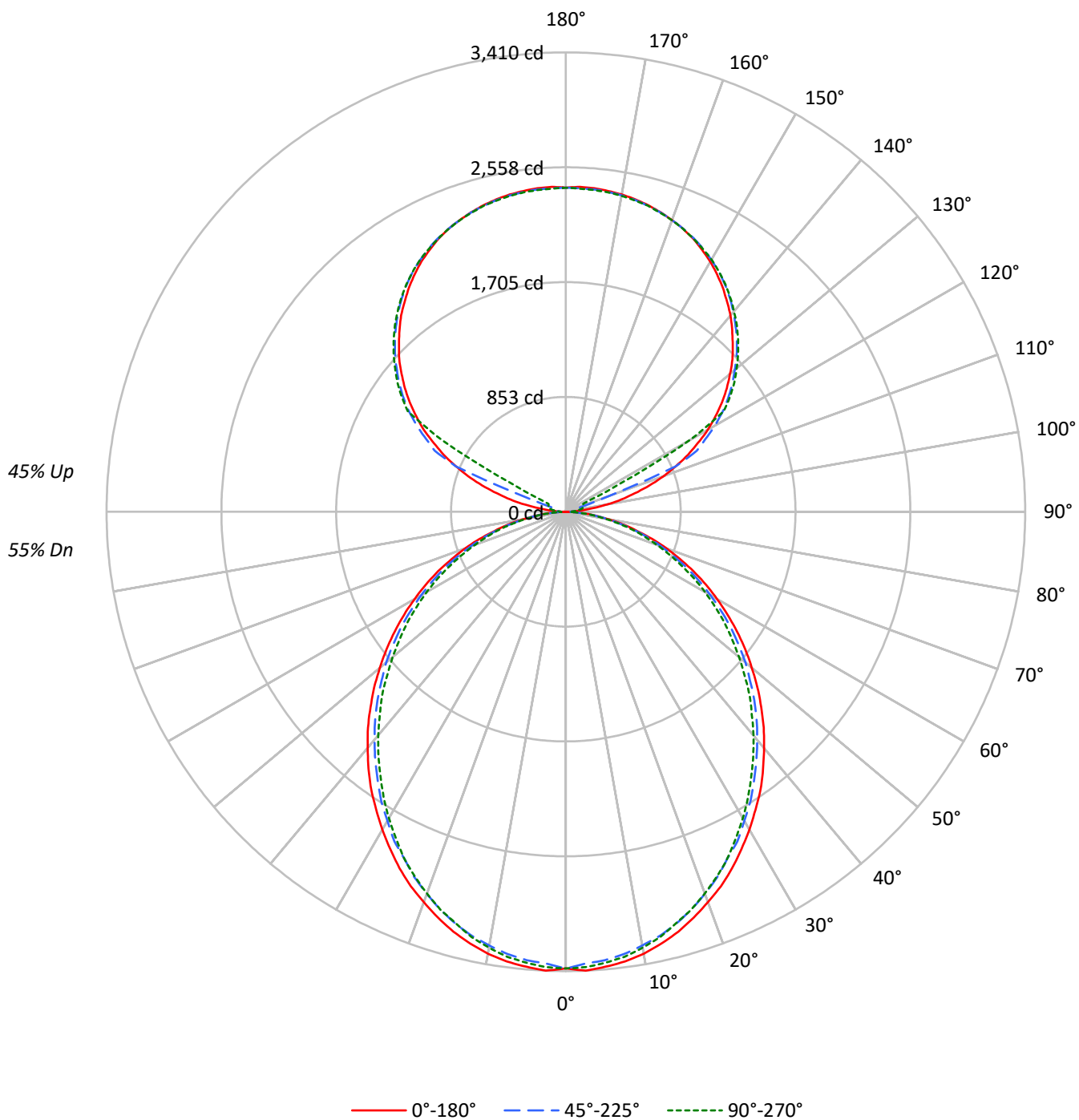
Lumens per Lamp: N/A
Luminaire Lumens: 15681.6 lumens
Efficiency: N/A
Efficacy: 87.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 180.2
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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	99	95	91	87	92	88	85	81	76	73	71	64	62	61	54	52	51
2	90	83	76	71	83	77	71	67	66	62	59	56	53	51	47	45	43
3	82	73	65	59	76	68	61	56	58	53	49	50	46	43	42	39	37
4	75	64	56	50	70	60	53	47	52	46	42	44	40	37	37	34	32
5	69	57	49	43	64	54	46	41	47	41	36	40	35	32	34	30	28
6	64	51	43	37	59	48	41	35	42	36	32	36	32	28	31	27	24
7	59	46	38	33	55	44	36	31	38	32	28	33	28	25	28	24	22
8	55	42	34	29	51	40	33	28	35	29	25	30	25	22	26	22	19
9	51	39	31	26	47	36	29	25	32	26	22	28	23	20	24	20	18
10	48	35	28	23	44	33	27	22	29	24	20	26	21	18	22	19	16

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	2.0
10°-20°	897.7	5.7
20°-30°	1319.3	8.4
30°-40°	1532.2	9.8
40°-50°	1530.4	9.8
50°-60°	1334.4	8.5
60°-70°	986.4	6.3
70°-80°	558.1	3.6
80°-90°	151.5	1.0
90°-100°	79.3	0.5
100°-110°	295.7	1.9
110°-120°	784.2	5.0
120°-130°	1300.7	8.3
130°-140°	1381.7	8.8
140°-150°	1284.1	8.2
150°-160°	1032.4	6.6
160°-170°	665.2	4.2
170°-180°	229.0	1.5
0°-30°	2536.0	16.2
0°-40°	4068.3	25.9
0°-60°	6933.0	44.2
0°-90°	8629.1	55.0
90°-120°	1159.3	7.4
90°-150°	5125.8	32.7
90°-180°	7052.0	45.0
0°-180°	15681.6	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	21	35	44	47	14
95°	113	56	68	77	75	134
105°	529	582	106	125	132	565
115°	1001	1030	1074	268	143	985
125°	1415	1438	1471	1483	1488	1262
135°	1751	1779	1795	1812	1809	1353
145°	2032	2030	2059	2071	2063	1271
155°	2237	2221	2242	2252	2239	1031
165°	2357	2346	2352	2364	2352	666
175°	2411	2399	2402	2414	2397	229
180°	2406	2406	2406	2406	2406	



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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°	1.7	20.9	34.7	43.6	46.9
92.5°	43.6	36.6	41.7	45.3	46.9
95°	113.1	55.6	67.8	76.7	74.8
97.5°	203.6	61.0	88.7	94.0	95.7
100°	308.2	69.7	99.2	113.1	116.6
102.5°	422.9	419.6	102.7	121.7	127.1
105°	529.1	581.5	106.2	125.3	132.3
107.5°	652.8	696.2	109.8	128.8	135.8
110°	771.2	807.6	304.7	130.6	137.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	882.6	913.8	884.3	133.9	139.3
115°	1000.9	1030.4	1074.0	268.1	142.8
117.5°	1103.6	1138.3	1168.0	919.0	463.0
120°	1218.5	1244.5	1276.0	1296.8	1061.8
122.5°	1315.9	1343.8	1378.7	1389.0	1390.9
125°	1415.1	1437.8	1470.9	1483.1	1488.2
127.5°	1505.6	1530.0	1556.3	1573.6	1575.3
130°	1591.0	1618.9	1637.9	1657.1	1655.5
132.5°	1678.0	1700.7	1719.7	1735.5	1733.8
135°	1751.2	1779.1	1794.6	1812.2	1808.7
137.5°	1827.7	1848.5	1866.1	1883.5	1878.3
140°	1902.5	1916.6	1935.6	1951.3	1942.6
142.5°	1965.3	1977.5	2000.0	2013.9	2005.3
145°	2031.5	2029.6	2059.2	2071.4	2062.7
147.5°	2088.7	2083.6	2113.1	2121.8	2115.0
150°	2144.6	2132.4	2160.3	2170.6	2161.9
152.5°	2191.5	2177.6	2203.7	2214.2	2202.0
155°	2236.8	2221.2	2242.1	2252.4	2238.6
157.5°	2273.4	2259.5	2275.2	2287.4	2273.4
160°	2304.7	2294.2	2304.7	2315.1	2302.9
162.5°	2332.4	2322.1	2330.8	2343.0	2327.3
165°	2356.8	2346.5	2351.7	2363.9	2351.7
167.5°	2376.1	2365.5	2370.9	2383.0	2367.4
170°	2391.8	2381.2	2384.7	2396.9	2381.2
172.5°	2402.1	2391.8	2395.2	2407.4	2391.8
175°	2410.8	2398.6	2402.1	2414.3	2396.9
177.5°	2414.3	2402.1	2404.0	2416.2	2400.5
180°	2405.6	2405.6	2405.6	2405.6	2405.6

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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	10.94	11.85	11.85	12.78	13.97	10.51	11.41	11.42	12.35	13.54
	3H	12.60	13.42	13.53	14.36	15.58	12.13	12.94	13.05	13.88	15.11
	4H	13.19	13.96	14.13	14.91	16.14	12.72	13.49	13.66	14.44	15.67
	6H	13.60	14.31	14.55	15.26	16.50	13.12	13.83	14.07	14.78	16.03
	8H	13.70	14.38	14.66	15.35	16.59	13.23	13.90	14.18	14.87	16.11
	12H	13.75	14.40	14.72	15.36	16.63	13.27	13.91	14.23	14.88	16.14
4H	2H	11.41	12.18	12.35	13.12	14.35	11.06	11.83	12.00	12.78	14.01
	3H	13.28	13.92	14.23	14.90	16.14	12.88	13.53	13.84	14.50	15.75
	4H	13.99	14.58	14.96	15.55	16.82	13.59	14.18	14.55	15.15	16.42
	6H	14.51	15.02	15.49	16.01	17.28	14.10	14.61	15.08	15.60	16.87
	8H	14.66	15.14	15.64	16.12	17.41	14.25	14.72	15.23	15.71	16.99
	12H	14.74	15.17	15.74	16.17	17.46	14.32	14.74	15.32	15.75	17.04
8H	4H	14.19	14.67	15.17	15.66	16.94	13.83	14.31	14.81	15.29	16.58
	6H	14.83	15.22	15.83	16.25	17.53	14.47	14.86	15.47	15.89	17.17
	8H	15.05	15.40	16.06	16.41	17.71	14.68	15.03	15.69	16.04	17.34
	12H	15.19	15.49	16.20	16.50	17.85	14.80	15.11	15.82	16.12	17.46
12H	4H	14.18	14.61	15.18	15.61	16.90	13.83	14.26	14.83	15.26	16.55
	6H	14.86	15.21	15.87	16.22	17.52	14.51	14.85	15.52	15.87	17.17
	8H	15.11	15.41	16.12	16.42	17.77	14.75	15.05	15.76	16.06	17.41

END OF REPORT