

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: P929360

Luminaire Tested: DFN2DIP-HX4F0-100D050US940-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929360
REPORT IS A COMBINATION OF REPORTS P900849 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-100D050US940-FLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

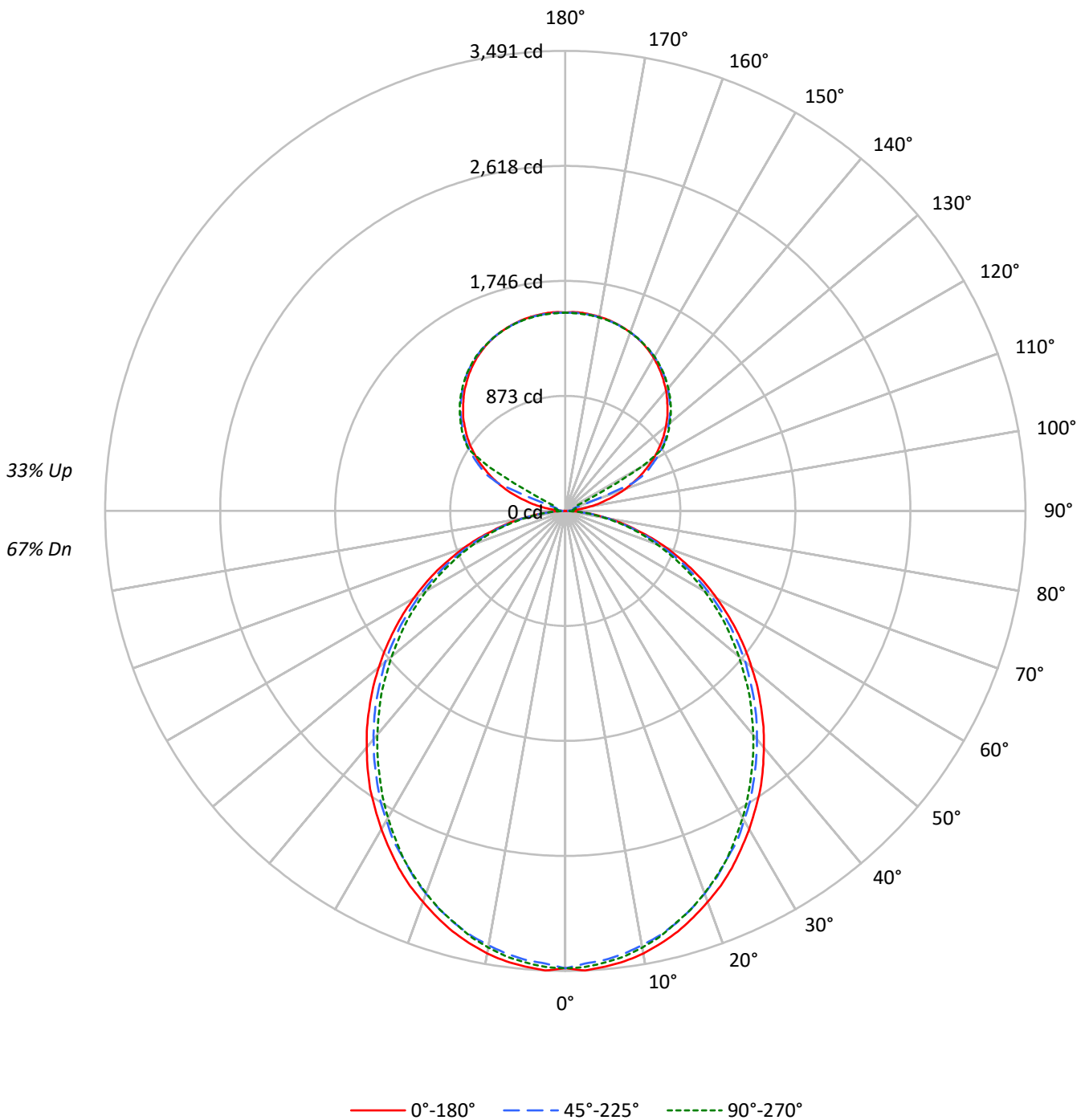
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13246.2 lumens
Efficiency: N/A
Efficacy: 96.7 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: Semi-Direct

Input Watts (W): 137
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				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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	71	71	71	67				67
1	102	97	93	90	95	92	88	85	81	79	76	72	70	68	63	62	60	56				56
2	92	85	79	73	87	80	75	70	71	67	63	63	60	57	56	53	51	47				47
3	84	75	67	61	79	71	64	58	63	58	53	56	52	48	49	46	43	40				40
4	77	66	58	52	72	63	55	50	56	50	45	50	45	41	44	40	37	34				34
5	71	59	51	44	67	56	48	43	50	44	39	45	40	36	40	36	33	30				30
6	66	53	45	39	62	50	43	37	45	39	34	41	35	32	36	32	29	26				26
7	61	48	40	34	57	46	38	33	41	35	30	37	32	28	33	29	26	23				23
8	56	44	36	30	53	42	34	29	38	31	27	34	29	25	30	26	23	21				21
9	53	40	32	27	50	38	31	26	35	29	24	31	26	23	28	24	21	19				19
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19	17				17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2581	2581	2581
5°	2585	2545	2562
10°	2564	2511	2528
15°	2527	2470	2473
20°	2476	2413	2418
25°	2426	2344	2354
30°	2362	2281	2273
35°	2302	2205	2186
40°	2229	2130	2104
45°	2155	2054	2021
50°	2074	1974	1924
55°	1990	1881	1834
60°	1895	1772	1732
65°	1791	1659	1611
70°	1659	1520	1482
75°	1476	1355	1362
80°	1256	1144	1133
85°	911	780	754

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2155 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	326.7	2.5
10°-20°	919.1	6.9
20°-30°	1350.8	10.2
30°-40°	1568.8	11.8
40°-50°	1566.9	11.8
50°-60°	1366.3	10.3
60°-70°	1010.0	7.6
70°-80°	571.4	4.3
80°-90°	153.5	1.2
90°-100°	49.7	0.4
100°-110°	185.0	1.4
110°-120°	490.7	3.7
120°-130°	813.9	6.1
130°-140°	864.5	6.5
140°-150°	803.5	6.1
150°-160°	646.0	4.9
160°-170°	416.2	3.1
170°-180°	143.3	1.1
0°-30°	2596.6	19.6
0°-40°	4165.4	31.4
0°-60°	7098.5	53.6
0°-90°	8833.4	66.7
90°-120°	725.4	5.5
90°-150°	3207.3	24.2
90°-180°	4413.0	33.3
0°-180°	13246.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3471	3471	3471	3471	3471	
5°	3471	3458	3421	3448	3441	329
15°	3304	3284	3241	3254	3238	931
25°	2990	2964	2907	2914	2907	1376
35°	2580	2547	2493	2473	2456	1611
45°	2099	2076	2026	1989	1976	1620
55°	1589	1569	1529	1489	1472	1420
65°	1072	1051	1018	988	971	1059
75°	560	554	537	517	524	598
85°	137	134	130	120	117	152
90°	1	13	22	27	29	12
95°	71	35	42	48	47	84
105°	331	364	66	78	83	354
115°	626	645	672	168	89	617
125°	885	900	920	928	931	790
135°	1096	1113	1123	1134	1132	846
145°	1271	1270	1288	1296	1291	795
155°	1400	1390	1403	1409	1401	645
165°	1475	1468	1471	1479	1471	417
175°	1508	1501	1503	1511	1500	144
180°	1505	1505	1505	1505	1505	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3470.9	3470.9	3470.9	3470.9	3470.9
2.5°	3491.0	3474.3	3437.5	3470.9	3464.4
5°	3470.9	3457.7	3420.9	3447.5	3441.1
7.5°	3447.5	3427.6	3390.8	3417.7	3411.0
10°	3411.0	3387.6	3347.6	3374.2	3364.3
12.5°	3360.7	3340.9	3300.8	3317.5	3310.7
15°	3304.1	3284.3	3240.6	3254.1	3237.5
17.5°	3233.9	3214.1	3170.5	3187.2	3170.5
20°	3157.1	3137.3	3090.5	3100.4	3087.3
22.5°	3080.6	3050.6	3006.9	3006.9	3000.2
25°	2990.3	2963.8	2907.1	2913.5	2907.1
27.5°	2890.1	2866.7	2823.5	2813.6	2797.0
30°	2790.3	2763.3	2713.4	2703.5	2690.0
32.5°	2683.3	2663.5	2610.0	2589.8	2576.4
35°	2579.9	2546.7	2493.1	2473.0	2456.3
37.5°	2463.1	2432.9	2379.5	2356.1	2339.4
40°	2343.0	2316.1	2262.6	2232.9	2219.5
42.5°	2226.2	2199.2	2146.2	2112.5	2092.7
45°	2099.4	2076.0	2025.7	1989.2	1975.9
47.5°	1975.9	1952.5	1899.0	1862.1	1842.3
50°	1845.5	1828.9	1782.1	1735.4	1718.8
52.5°	1718.8	1695.4	1652.2	1615.4	1592.0
55°	1588.8	1568.7	1528.6	1488.6	1472.0
57.5°	1458.5	1441.8	1398.3	1358.3	1344.9
60°	1328.2	1315.1	1268.3	1231.5	1221.6
62.5°	1201.4	1178.1	1144.8	1111.5	1098.1
65°	1071.5	1051.3	1018.0	987.9	971.3
67.5°	938.0	921.0	891.3	867.9	854.4
70°	814.4	800.9	770.9	747.5	734.4
72.5°	687.6	674.2	657.6	634.2	624.2
75°	560.5	554.2	537.2	517.4	524.0
77.5°	447.2	433.8	427.0	417.1	407.2
80°	333.9	330.4	323.6	313.7	307.0
82.5°	227.0	227.0	223.8	210.3	210.3
85°	136.7	133.5	130.3	120.1	116.9
87.5°	60.2	53.4	46.7	36.8	33.3
90°	1.1	13.0	21.8	27.3	29.3
92.5°	27.3	22.9	26.1	28.4	29.3
95°	70.7	34.8	42.5	48.0	46.8
97.5°	127.4	38.2	55.5	58.9	59.9
100°	192.9	43.6	62.1	70.7	73.0
102.5°	264.7	262.5	64.3	76.2	79.6
105°	331.1	363.8	66.5	78.4	82.8
107.5°	408.4	435.6	68.7	80.5	85.0
110°	482.6	505.3	190.6	81.7	86.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	552.2	571.8	553.3	83.8	87.1
115°	626.3	644.7	672.0	167.8	89.4
117.5°	690.5	712.3	730.9	575.0	289.7
120°	762.4	778.7	798.3	811.5	664.4
122.5°	823.3	840.8	862.7	869.2	870.3
125°	885.4	899.7	920.4	927.9	931.2
127.5°	942.0	957.3	973.8	984.6	985.7
130°	995.5	1013.0	1024.8	1036.9	1035.9
132.5°	1050.0	1064.2	1076.0	1085.9	1084.9
135°	1095.7	1113.2	1122.8	1133.9	1131.7
137.5°	1143.5	1156.7	1167.6	1178.5	1175.3
140°	1190.4	1199.2	1211.1	1220.9	1215.5
142.5°	1229.7	1237.4	1251.5	1260.1	1254.7
145°	1271.1	1269.9	1288.4	1296.1	1290.6
147.5°	1307.0	1303.7	1322.2	1327.7	1323.4
150°	1341.8	1334.3	1351.6	1358.2	1352.7
152.5°	1371.2	1362.5	1378.9	1385.5	1377.8
155°	1399.5	1389.8	1402.8	1409.4	1400.7
157.5°	1422.4	1413.7	1423.5	1431.2	1422.4
160°	1442.1	1435.5	1442.1	1448.5	1440.9
162.5°	1459.4	1453.0	1458.3	1466.0	1456.2
165°	1474.7	1468.2	1471.4	1479.0	1471.4
167.5°	1486.7	1480.1	1483.5	1491.1	1481.3
170°	1496.5	1489.9	1492.1	1499.7	1489.9
172.5°	1503.0	1496.5	1498.7	1506.3	1496.5
175°	1508.5	1500.8	1503.0	1510.6	1499.7
177.5°	1510.6	1503.0	1504.2	1511.8	1501.9
180°	1505.2	1505.2	1505.2	1505.2	1505.2



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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	11.98	13.01	12.78	13.84	14.85	11.55	12.58	12.35	13.40	14.42
	3H	13.65	14.58	14.47	15.41	16.45	13.18	14.11	13.99	14.94	15.98
	4H	14.25	15.13	15.08	15.97	17.02	13.78	14.65	14.61	15.49	16.54
	6H	14.66	15.47	15.50	16.32	17.38	14.18	14.99	15.03	15.84	16.90
	8H	14.77	15.54	15.62	16.41	17.47	14.29	15.07	15.14	15.93	17.00
	12H	14.82	15.56	15.68	16.42	17.51	14.34	15.08	15.20	15.94	17.03
4H	2H	12.46	13.34	13.30	14.18	15.23	12.12	13.00	12.95	13.83	14.89
	3H	14.34	15.08	15.19	15.95	17.02	13.95	14.68	14.80	15.56	16.62
	4H	15.07	15.73	15.93	16.60	17.70	14.66	15.33	15.52	16.20	17.29
	6H	15.59	16.17	16.47	17.06	18.16	15.18	15.76	16.06	16.65	17.75
	8H	15.75	16.29	16.62	17.18	18.29	15.33	15.87	16.21	16.76	17.87
	12H	15.83	16.32	16.73	17.22	18.34	15.41	15.89	16.30	16.80	17.92
8H	4H	15.28	15.82	16.16	16.71	17.82	14.92	15.46	15.80	16.35	17.46
	6H	15.92	16.37	16.82	17.30	18.41	15.56	16.00	16.46	16.93	18.04
	8H	16.14	16.54	17.06	17.46	18.59	15.77	16.17	16.69	17.09	18.22
	12H	16.28	16.63	17.20	17.55	18.73	15.90	16.25	16.82	17.16	18.34
12H	4H	15.27	15.76	16.17	16.67	17.78	14.92	15.41	15.82	16.31	17.43
	6H	15.95	16.35	16.86	17.27	18.40	15.60	15.99	16.51	16.92	18.05
	8H	16.20	16.55	17.12	17.47	18.65	15.84	16.19	16.76	17.11	18.29