

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: P929112

Luminaire Tested: DFN2DIP-HX4F0-120D060US935-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P929112
REPORT IS A COMBINATION OF REPORTS P900871 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-120D060US935-FLLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

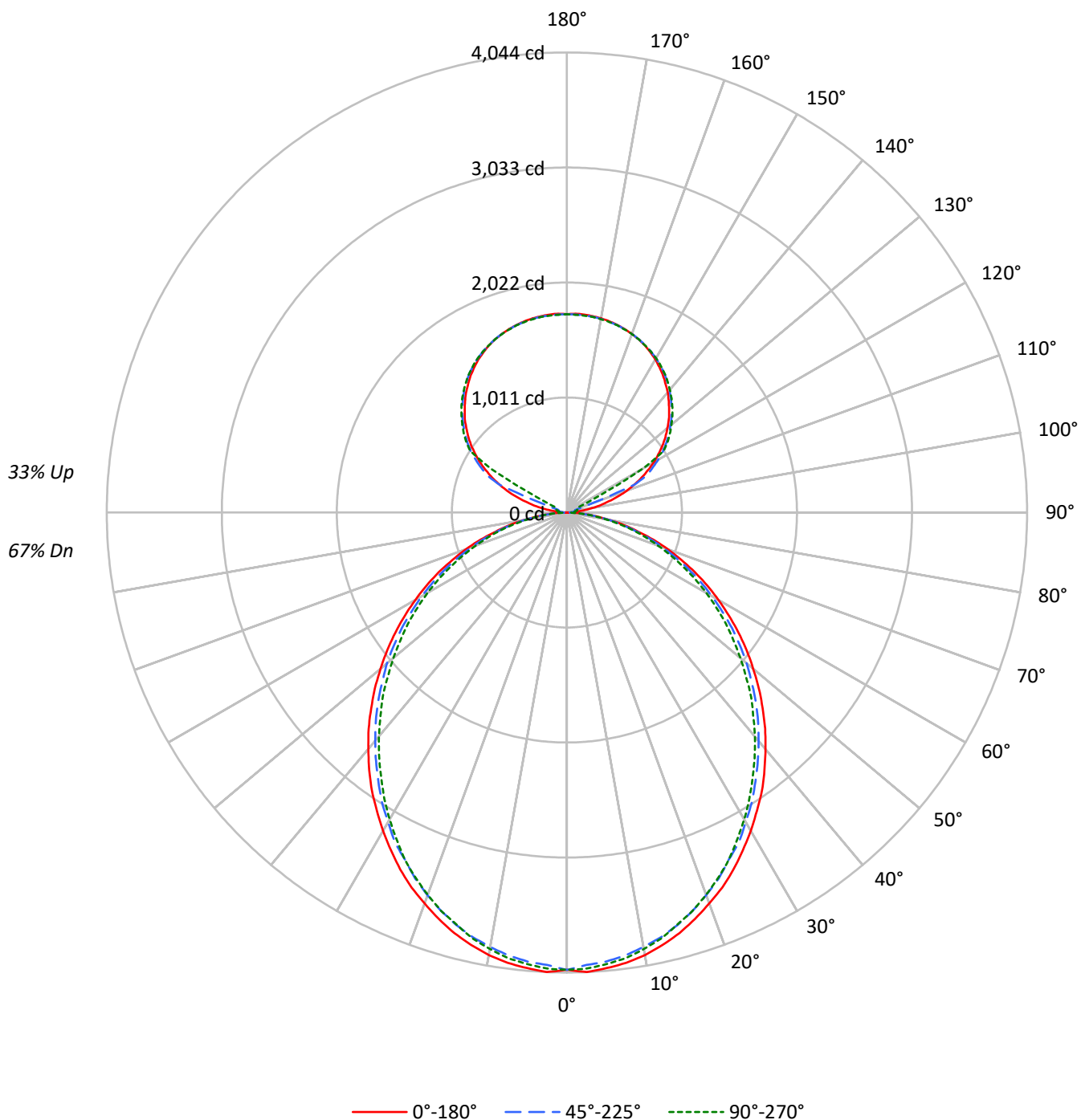
Lumens per Lamp: N/A
Luminaire Lumens: 15343.0 lumens
Efficiency: N/A
Efficacy: 90.1 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 170.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9954
Total Harmonic Distortion (THDi): 0.076
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			0
RW	70	50	30	10	70	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
1	102	97	93	90	95	92	88	85	81	79	76		72	70	68		63	62	60	56
2	92	85	79	73	87	80	75	70	71	67	63		63	60	57		56	53	51	47
3	84	75	67	61	79	71	64	58	63	58	53		56	52	48		49	46	43	40
4	77	66	58	52	72	63	55	50	56	50	45		50	45	41		44	40	37	34
5	71	59	51	44	67	56	48	43	50	44	39		45	40	36		40	36	33	30
6	66	53	45	39	62	50	43	37	45	39	34		41	35	32		36	32	29	26
7	61	48	40	34	57	46	38	33	41	35	30		37	32	28		33	29	26	23
8	56	44	36	30	53	42	34	29	38	31	27		34	29	25		30	26	23	21
9	53	40	32	27	50	38	31	26	35	29	24		31	26	23		28	24	21	19
10	49	37	29	24	46	35	28	24	32	26	22		29	24	20		26	22	19	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2989	2989	2989
5°	2994	2948	2968
10°	2970	2909	2928
15°	2927	2861	2865
20°	2868	2795	2801
25°	2810	2715	2727
30°	2736	2642	2632
35°	2667	2555	2533
40°	2581	2467	2438
45°	2496	2379	2340
50°	2403	2286	2228
55°	2305	2179	2125
60°	2195	2052	2006
65°	2075	1921	1866
70°	1922	1761	1716
75°	1709	1569	1578
80°	1455	1325	1312
85°	1055	903	873

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2496 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	378.4	2.5
10°-20°	1064.6	6.9
20°-30°	1564.6	10.2
30°-40°	1817.2	11.8
40°-50°	1814.9	11.8
50°-60°	1582.5	10.3
60°-70°	1169.9	7.6
70°-80°	661.9	4.3
80°-90°	177.8	1.2
90°-100°	57.5	0.4
100°-110°	214.3	1.4
110°-120°	568.4	3.7
120°-130°	942.7	6.1
130°-140°	1001.4	6.5
140°-150°	930.7	6.1
150°-160°	748.2	4.9
160°-170°	482.1	3.1
170°-180°	165.9	1.1
0°-30°	3007.6	19.6
0°-40°	4824.8	31.4
0°-60°	8222.2	53.6
0°-90°	10231.7	66.7
90°-120°	840.2	5.5
90°-150°	3714.9	24.2
90°-180°	5111.0	33.3
0°-180°	15343.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4020	4020	4020	4020	4020	
5°	4020	4005	3962	3993	3986	382
15°	3827	3804	3754	3769	3750	1078
25°	3464	3433	3367	3375	3367	1594
35°	2988	2950	2888	2864	2845	1866
45°	2432	2405	2346	2304	2289	1877
55°	1840	1817	1771	1724	1705	1645
65°	1241	1218	1179	1144	1125	1227
75°	649	642	622	599	607	693
85°	158	155	151	139	135	177
90°	1	15	25	32	34	14
95°	82	40	49	56	54	97
105°	384	421	77	91	96	410
115°	725	747	778	194	104	714
125°	1026	1042	1066	1075	1079	915
135°	1269	1289	1301	1313	1311	980
145°	1472	1471	1492	1501	1495	921
155°	1621	1610	1625	1632	1622	747
165°	1708	1701	1704	1713	1704	483
175°	1747	1738	1741	1750	1737	166
180°	1743	1743	1743	1743	1743	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4020.3	4020.3	4020.3	4020.3	4020.3
2.5°	4043.6	4024.3	3981.7	4020.3	4012.9
5°	4020.3	4005.0	3962.4	3993.1	3985.7
7.5°	3993.1	3970.2	3927.5	3958.7	3951.0
10°	3951.0	3923.8	3877.5	3908.3	3896.8
12.5°	3892.7	3869.7	3823.4	3842.6	3834.8
15°	3827.1	3804.1	3753.6	3769.2	3749.9
17.5°	3745.9	3722.9	3672.4	3691.7	3672.4
20°	3656.8	3633.9	3579.8	3591.2	3576.1
22.5°	3568.2	3533.4	3482.9	3482.9	3475.2
25°	3463.6	3432.9	3367.3	3374.7	3367.3
27.5°	3347.6	3320.5	3270.5	3259.0	3239.8
30°	3231.9	3200.8	3142.9	3131.5	3115.9
32.5°	3108.0	3085.1	3023.1	2999.8	2984.2
35°	2988.3	2949.8	2887.8	2864.5	2845.2
37.5°	2852.9	2818.1	2756.1	2729.1	2709.8
40°	2714.0	2682.8	2620.8	2586.4	2570.8
42.5°	2578.6	2547.4	2485.9	2447.0	2424.0
45°	2431.7	2404.7	2346.4	2304.2	2288.6
47.5°	2288.6	2261.5	2199.6	2157.0	2134.0
50°	2137.7	2118.4	2064.2	2010.1	1990.8
52.5°	1990.8	1963.8	1913.7	1871.0	1844.0
55°	1840.3	1817.0	1770.6	1724.2	1705.0
57.5°	1689.4	1670.1	1619.6	1573.3	1557.7
60°	1538.4	1523.3	1469.1	1426.5	1415.0
62.5°	1391.6	1364.5	1326.0	1287.5	1271.9
65°	1241.1	1217.7	1179.1	1144.3	1125.1
67.5°	1086.5	1066.8	1032.3	1005.3	989.7
70°	943.3	927.7	892.9	865.8	850.7
72.5°	796.5	780.9	761.6	734.6	723.1
75°	649.3	641.9	622.2	599.3	607.0
77.5°	518.0	502.4	494.6	483.1	471.7
80°	386.8	382.6	374.9	363.4	355.6
82.5°	262.9	262.9	259.2	243.7	243.7
85°	158.3	154.6	150.9	139.1	135.3
87.5°	69.7	61.9	54.2	42.6	38.6
90°	1.2	15.2	25.1	31.6	34.0
92.5°	31.6	26.5	30.2	32.8	34.0
95°	82.0	40.3	49.2	55.6	54.2
97.5°	147.6	44.2	64.2	68.2	69.4
100°	223.3	50.5	71.9	82.0	84.5
102.5°	306.5	304.1	74.5	88.3	92.1
105°	383.5	421.4	77.0	90.7	95.9
107.5°	473.1	504.5	79.6	93.3	98.4
110°	559.0	585.3	220.8	94.7	99.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	639.6	662.3	640.8	97.0	101.0
115°	725.4	746.8	778.4	194.3	103.5
117.5°	799.8	825.0	846.5	666.1	335.5
120°	883.1	902.0	924.8	939.9	769.6
122.5°	953.6	973.9	999.2	1006.7	1008.1
125°	1025.6	1042.1	1066.0	1074.9	1078.6
127.5°	1091.2	1108.9	1127.9	1140.5	1141.7
130°	1153.1	1173.3	1187.1	1201.0	1199.8
132.5°	1216.2	1232.6	1246.4	1257.7	1256.5
135°	1269.2	1289.4	1300.6	1313.4	1310.8
137.5°	1324.6	1339.7	1352.5	1365.0	1361.3
140°	1378.8	1389.1	1402.8	1414.2	1407.9
142.5°	1424.4	1433.2	1449.6	1459.6	1453.3
145°	1472.3	1470.9	1492.4	1501.2	1495.0
147.5°	1513.8	1510.0	1531.5	1537.7	1532.8
150°	1554.3	1545.4	1565.6	1573.1	1566.8
152.5°	1588.3	1578.2	1597.1	1604.7	1595.9
155°	1621.1	1609.8	1625.0	1632.5	1622.4
157.5°	1647.6	1637.5	1648.9	1657.8	1647.6
160°	1670.3	1662.7	1670.3	1677.8	1669.0
162.5°	1690.4	1682.9	1689.2	1698.1	1686.7
165°	1708.1	1700.6	1704.3	1713.2	1704.3
167.5°	1722.0	1714.4	1718.3	1727.2	1715.7
170°	1733.5	1725.8	1728.4	1737.2	1725.8
172.5°	1740.9	1733.5	1735.9	1744.8	1733.5
175°	1747.2	1738.4	1740.9	1749.7	1737.2
177.5°	1749.7	1740.9	1742.2	1751.1	1739.7
180°	1743.4	1743.4	1743.4	1743.4	1743.4

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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	12.49	13.52	13.29	14.35	15.36	12.06	13.09	12.86	13.91	14.93
	3H	14.16	15.09	14.98	15.92	16.96	13.69	14.62	14.50	15.45	16.49
	4H	14.76	15.64	15.59	16.48	17.53	14.29	15.16	15.12	16.00	17.05
	6H	15.17	15.98	16.01	16.83	17.89	14.69	15.50	15.54	16.35	17.42
	8H	15.28	16.05	16.13	16.92	17.98	14.80	15.58	15.66	16.44	17.51
	12H	15.33	16.07	16.19	16.93	18.02	14.85	15.59	15.71	16.45	17.54
4H	2H	12.97	13.85	13.81	14.69	15.74	12.63	13.51	13.46	14.35	15.40
	3H	14.86	15.59	15.70	16.46	17.53	14.46	15.20	15.31	16.07	17.13
	4H	15.58	16.25	16.44	17.12	18.21	15.17	15.84	16.03	16.71	17.80
	6H	16.10	16.68	16.98	17.58	18.67	15.69	16.27	16.57	17.17	18.26
	8H	16.26	16.80	17.14	17.69	18.80	15.85	16.39	16.72	17.27	18.38
	12H	16.34	16.83	17.24	17.73	18.85	15.92	16.40	16.82	17.31	18.43
8H	4H	15.79	16.33	16.67	17.22	18.33	15.43	15.97	16.31	16.86	17.97
	6H	16.43	16.88	17.33	17.81	18.92	16.07	16.51	16.97	17.44	18.55
	8H	16.65	17.05	17.57	17.97	19.10	16.28	16.68	17.20	17.60	18.73
	12H	16.79	17.14	17.71	18.06	19.24	16.41	16.76	17.33	17.67	18.85
12H	4H	15.78	16.27	16.68	17.18	18.29	15.43	15.92	16.33	16.83	17.94
	6H	16.46	16.86	17.38	17.78	18.91	16.11	16.51	17.02	17.43	18.56
	8H	16.71	17.06	17.63	17.98	19.16	16.35	16.70	17.27	17.62	18.80