

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: P928752

Luminaire Tested: DFN2DIP-HX4F0-110D060US930-FLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928752
REPORT IS A COMBINATION OF REPORTS P900869 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US930-FLONL
Description: 4 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

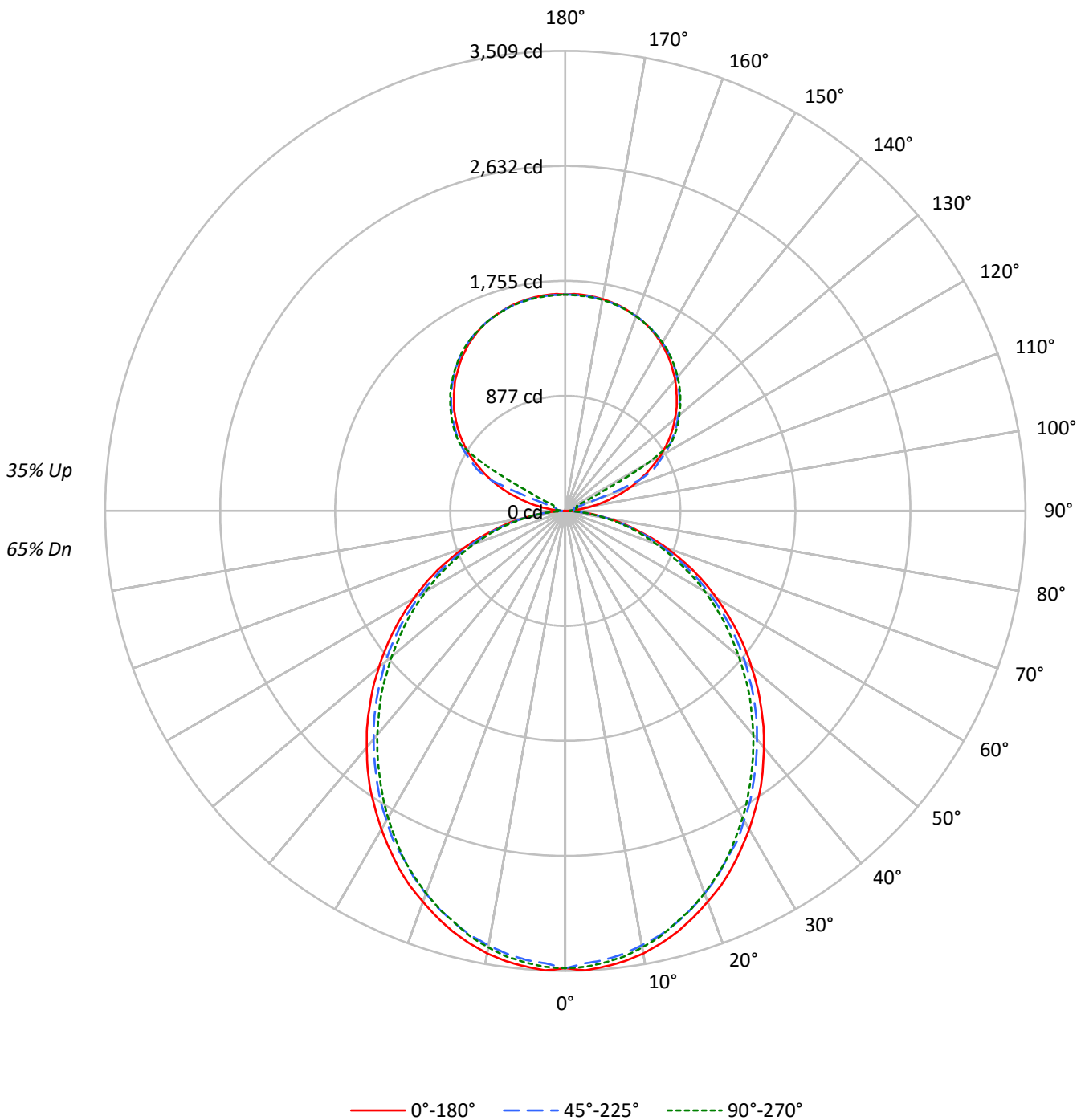
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 13716.4 lumens
Efficiency: N/A
Efficacy: 87.8 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): 156.3
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				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	104	104	104	104	92	92	92	80	80	80	70	70	70	65				65
1	101	97	93	89	95	91	88	84	80	78	75	71	69	67	62	60	59	55				55
2	92	84	78	73	86	80	74	69	70	66	62	62	59	56	54	52	50	46				46
3	84	74	67	61	79	70	63	58	62	57	53	55	51	47	48	45	42	39				39
4	77	66	58	51	72	62	55	49	55	49	45	49	44	41	43	39	36	33				33
5	71	59	50	44	66	56	48	42	50	43	39	44	39	35	39	35	32	29				29
6	65	53	44	39	61	50	42	37	45	39	34	40	35	31	35	31	28	25				25
7	60	48	40	34	57	45	38	33	41	34	30	36	31	27	32	28	25	23				23
8	56	43	36	30	53	41	34	29	37	31	27	33	28	25	30	25	22	20				20
9	52	40	32	27	49	38	31	26	34	28	24	31	26	22	27	23	20	18				18
10	49	37	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18	17				17

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	2.4
10°-20°	923.8	6.7
20°-30°	1357.6	9.9
30°-40°	1576.7	11.5
40°-50°	1574.8	11.5
50°-60°	1373.2	10.0
60°-70°	1015.1	7.4
70°-80°	574.3	4.2
80°-90°	154.5	1.1
90°-100°	54.4	0.4
100°-110°	202.9	1.5
110°-120°	538.0	3.9
120°-130°	892.3	6.5
130°-140°	947.9	6.9
140°-150°	880.9	6.4
150°-160°	708.2	5.2
160°-170°	456.4	3.3
170°-180°	157.1	1.1
0°-30°	2609.7	19.0
0°-40°	4186.4	30.5
0°-60°	7134.4	52.0
0°-90°	8878.3	64.7
90°-120°	795.3	5.8
90°-150°	3516.4	25.6
90°-180°	4838.0	35.3
0°-180°	13716.4	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	14	24	30	32	13
95°	78	38	46	53	51	92
105°	363	399	73	86	91	388
115°	687	707	737	184	98	676
125°	971	986	1009	1017	1021	866
135°	1201	1220	1231	1243	1241	928
145°	1394	1392	1413	1421	1415	872
155°	1534	1524	1538	1545	1536	707
165°	1617	1610	1613	1622	1613	457
175°	1654	1646	1648	1656	1644	157
180°	1650	1650	1650	1650	1650	



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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°	1.1	14.3	23.8	29.9	32.2
92.5°	29.9	25.1	28.6	31.1	32.2
95°	77.6	38.1	46.5	52.6	51.3
97.5°	139.7	41.8	60.8	64.5	65.7
100°	211.4	47.8	68.1	77.6	80.0
102.5°	290.1	287.9	70.5	83.5	87.2
105°	363.0	398.9	72.9	85.9	90.8
107.5°	447.8	477.6	75.3	88.3	93.2
110°	529.1	554.0	209.0	89.6	94.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	605.5	626.9	606.6	91.9	95.6
115°	686.6	706.9	736.8	183.9	98.0
117.5°	757.1	780.9	801.3	630.5	317.6
120°	835.9	853.8	875.4	889.7	728.4
122.5°	902.7	921.8	945.8	952.9	954.2
125°	970.8	986.4	1009.1	1017.4	1021.0
127.5°	1032.9	1049.6	1067.6	1079.5	1080.7
130°	1091.4	1110.6	1123.6	1136.8	1135.7
132.5°	1151.2	1166.8	1179.8	1190.6	1189.4
135°	1201.4	1220.5	1231.1	1243.2	1240.8
137.5°	1253.8	1268.1	1280.2	1292.1	1288.6
140°	1305.1	1314.8	1327.9	1338.6	1332.7
142.5°	1348.3	1356.6	1372.1	1381.6	1375.6
145°	1393.6	1392.3	1412.6	1421.0	1415.1
147.5°	1432.9	1429.3	1449.6	1455.6	1450.9
150°	1471.2	1462.8	1482.0	1489.1	1483.1
152.5°	1503.4	1493.9	1511.7	1519.0	1510.6
155°	1534.5	1523.8	1538.1	1545.2	1535.7
157.5°	1559.6	1550.0	1560.8	1569.2	1559.6
160°	1581.1	1573.8	1581.1	1588.2	1579.9
162.5°	1600.1	1593.0	1598.9	1607.3	1596.6
165°	1616.9	1609.8	1613.3	1621.7	1613.3
167.5°	1630.0	1622.8	1626.5	1634.9	1624.1
170°	1640.8	1633.6	1636.0	1644.3	1633.6
172.5°	1647.9	1640.8	1643.2	1651.6	1640.8
175°	1653.9	1645.5	1647.9	1656.2	1644.3
177.5°	1656.2	1647.9	1649.2	1657.5	1646.8
180°	1650.3	1650.3	1650.3	1650.3	1650.3



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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	11.84	12.85	12.66	13.70	14.74	11.41	12.42	12.23	13.26	14.31
	3H	13.52	14.42	14.35	15.27	16.35	13.04	13.95	13.87	14.80	15.87
	4H	14.11	14.97	14.96	15.83	16.91	13.64	14.49	14.49	15.35	16.44
	6H	14.52	15.31	15.38	16.18	17.27	14.04	14.83	14.90	15.70	16.80
	8H	14.63	15.38	15.50	16.27	17.36	14.15	14.91	15.02	15.79	16.89
	12H	14.68	15.40	15.56	16.28	17.40	14.20	14.92	15.08	15.80	16.92
4H	2H	12.32	13.18	13.18	14.04	15.12	11.98	12.84	12.83	13.69	14.78
	3H	14.20	14.92	15.07	15.81	16.91	13.81	14.53	14.68	15.42	16.52
	4H	14.92	15.58	15.80	16.47	17.59	14.52	15.17	15.40	16.06	17.18
	6H	15.45	16.01	16.34	16.93	18.05	15.04	15.60	15.93	16.52	17.64
	8H	15.60	16.13	16.50	17.04	18.18	15.19	15.72	16.09	16.62	17.77
	12H	15.68	16.16	16.60	17.09	18.23	15.26	15.74	16.18	16.66	17.81
8H	4H	15.13	15.66	16.03	16.57	17.71	14.77	15.30	15.67	16.21	17.35
	6H	15.77	16.21	16.70	17.16	18.30	15.41	15.85	16.33	16.80	17.94
	8H	16.00	16.38	16.93	17.32	18.48	15.63	16.01	16.56	16.95	18.11
	12H	16.14	16.48	17.07	17.41	18.62	15.75	16.09	16.69	17.02	18.23
12H	4H	15.13	15.60	16.04	16.53	17.67	14.77	15.25	15.69	16.18	17.32
	6H	15.80	16.19	16.74	17.13	18.29	15.45	15.84	16.39	16.78	17.94
	8H	16.05	16.40	16.99	17.33	18.54	15.70	16.04	16.63	16.97	18.18