

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: P928754

Luminaire Tested: DFN2DIP-HX4F0-110D060US930-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P928754
REPORT IS A COMBINATION OF REPORTS P900870 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-110D060US930-RLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

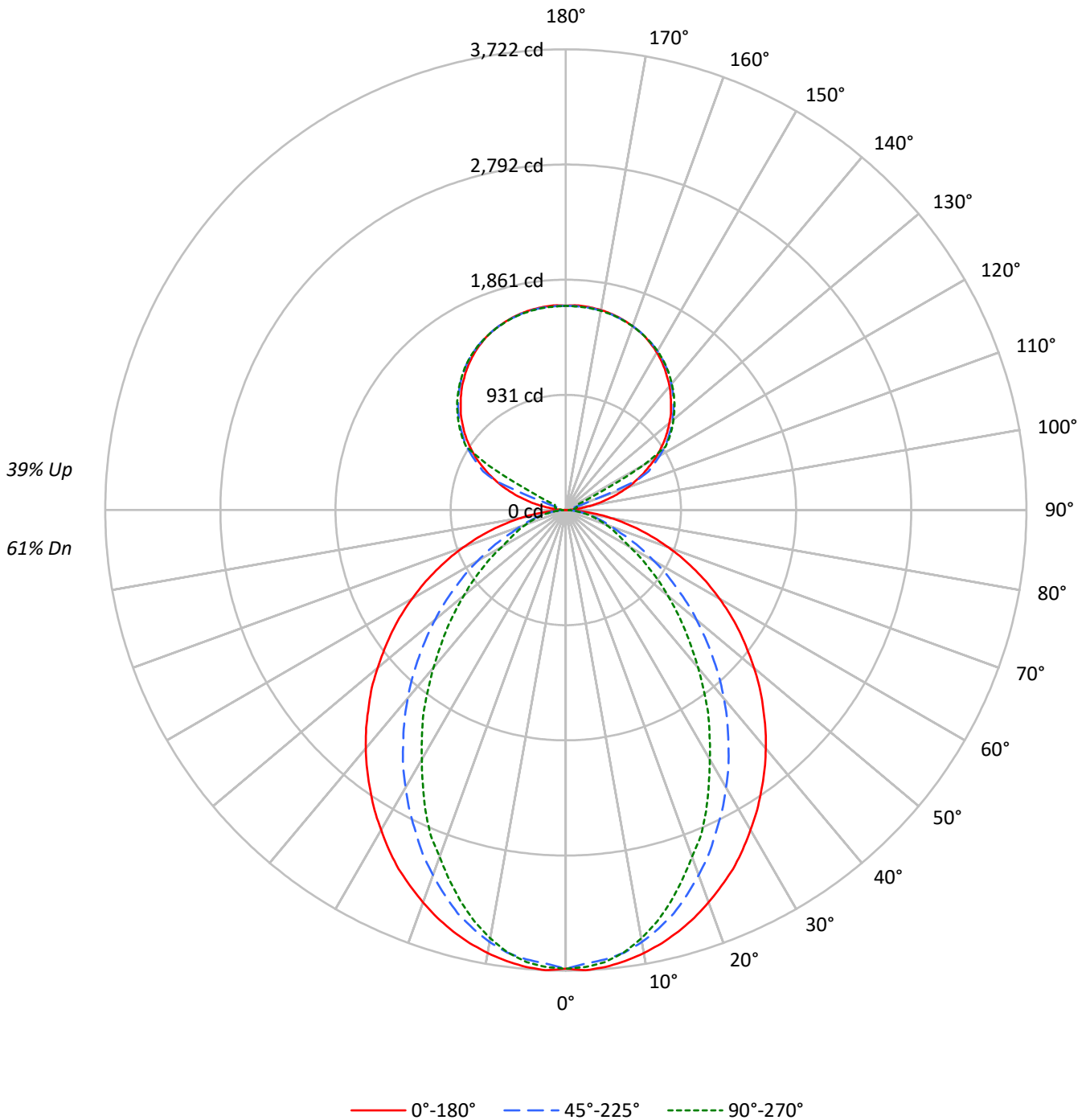
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12461.3 lumens
Efficiency: N/A
Efficacy: 79.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
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				
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	110	110	110	110	103	103	103	103	90	90	90	77	77	77	66	66	66	66	66	66	61
1	101	97	93	90	94	91	87	85	79	77	75	69	67	66	60	58	57	60	58	57	53
2	92	85	79	74	86	80	75	70	70	66	63	61	58	56	53	51	49	53	51	49	45
3	85	75	68	63	79	71	65	60	63	58	54	55	51	48	48	45	43	48	45	43	39
4	78	67	59	54	73	63	56	51	56	51	46	49	45	42	43	40	37	43	40	37	34
5	72	60	52	46	67	57	50	44	51	45	40	45	40	37	39	36	33	39	36	33	30
6	66	54	46	41	62	51	44	39	46	40	36	41	36	32	36	32	29	36	32	29	27
7	61	49	41	36	58	47	40	35	42	36	32	37	32	29	33	29	26	33	29	26	24
8	57	45	37	32	54	43	36	31	38	33	28	34	29	26	30	26	24	30	26	24	21
9	53	41	34	29	50	39	32	28	35	30	26	32	27	24	28	24	22	28	24	22	19
10	50	38	31	26	47	36	30	25	33	27	23	29	25	21	26	22	20	26	22	20	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2755	2755	2755
5°	2760	2712	2729
10°	2733	2659	2640
15°	2695	2571	2503
20°	2646	2450	2335
25°	2595	2315	2172
30°	2527	2176	1966
35°	2460	2026	1785
40°	2392	1872	1577
45°	2313	1700	1389
50°	2231	1526	1205
55°	2146	1341	1028
60°	2047	1147	846
65°	1934	951	762
70°	1797	767	690
75°	1624	676	628
80°	1374	568	545
85°	961	381	411

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2313 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	347.3	2.8
10°-20°	953.3	7.7
20°-30°	1338.4	10.7
30°-40°	1458.9	11.7
40°-50°	1340.9	10.8
50°-60°	1053.1	8.5
60°-70°	685.5	5.5
70°-80°	352.9	2.8
80°-90°	93.0	0.7
90°-100°	54.4	0.4
100°-110°	202.9	1.6
110°-120°	538.0	4.3
120°-130°	892.3	7.2
130°-140°	947.9	7.6
140°-150°	880.9	7.1
150°-160°	708.2	5.7
160°-170°	456.4	3.7
170°-180°	157.1	1.3
0°-30°	2638.9	21.2
0°-40°	4097.9	32.9
0°-60°	6491.9	52.1
0°-90°	7623.2	61.2
90°-120°	795.3	6.4
90°-150°	3516.4	28.2
90°-180°	4838.0	38.8
0°-180°	12461.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3705	3705	3705	3705	3705	
5°	3705	3688	3645	3675	3665	351
15°	3524	3487	3373	3310	3276	993
25°	3199	3092	2870	2733	2682	1471
35°	2756	2585	2290	2079	2005	1725
45°	2253	2028	1677	1438	1358	1740
55°	1713	1452	1090	889	825	1531
65°	1157	885	584	470	459	1147
75°	617	382	268	245	242	652
85°	144	74	64	64	64	165
90°	1	14	24	30	32	12
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°	3705.2	3705.2	3705.2	3705.2	3705.2
2.5°	3721.9	3705.2	3668.2	3702.1	3695.3
5°	3705.2	3688.5	3644.8	3675.0	3665.1
7.5°	3675.0	3655.0	3608.1	3621.3	3604.5
10°	3634.8	3611.3	3544.4	3534.1	3514.2
12.5°	3584.6	3554.4	3463.7	3443.7	3406.7
15°	3524.1	3487.1	3373.3	3309.6	3276.1
17.5°	3453.7	3400.0	3259.1	3185.4	3131.7
20°	3373.3	3306.0	3138.5	3054.9	2980.9
22.5°	3286.2	3208.9	3014.4	2900.5	2850.3
25°	3199.0	3091.5	2870.3	2732.9	2682.4
27.5°	3095.1	2980.9	2736.1	2578.5	2501.3
30°	2984.4	2856.7	2588.5	2417.7	2327.0
32.5°	2877.0	2722.6	2447.9	2246.6	2162.7
35°	2756.4	2585.3	2290.4	2079.1	2005.1
37.5°	2639.1	2454.4	2142.7	1911.1	1827.6
40°	2514.8	2313.9	1988.4	1750.3	1663.2
42.5°	2387.5	2173.0	1834.3	1586.0	1502.4
45°	2253.4	2028.5	1676.7	1438.3	1358.0
47.5°	2126.0	1888.0	1525.8	1287.5	1213.9
50°	1985.1	1747.1	1378.2	1146.6	1076.5
52.5°	1847.4	1595.9	1237.3	1016.1	952.3
55°	1713.3	1451.8	1089.7	888.7	825.0
57.5°	1576.0	1307.7	959.1	771.3	717.5
60°	1435.1	1166.9	821.4	650.7	597.0
62.5°	1297.8	1029.6	704.1	543.3	516.5
65°	1156.9	885.1	583.5	469.6	459.3
67.5°	1022.8	751.0	469.6	412.3	402.4
70°	881.9	620.5	388.8	355.4	341.9
72.5°	747.8	499.5	325.2	298.5	291.7
75°	616.9	382.1	268.2	244.7	241.6
77.5°	486.3	271.5	211.3	197.8	191.0
80°	365.4	194.6	160.8	147.7	147.7
82.5°	254.7	130.9	110.7	103.9	103.9
85°	144.1	73.7	63.7	63.7	63.7
87.5°	53.7	26.7	26.7	23.5	23.5
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	11.65	12.58	12.51	13.46	14.57	7.63	8.56	8.49	9.44	10.54
	3H	13.34	14.17	14.21	15.06	16.19	8.82	9.66	9.70	10.54	11.68
	4H	13.95	14.74	14.84	15.63	16.77	9.28	10.07	10.17	10.96	12.10
	6H	14.38	15.10	15.28	16.00	17.16	9.61	10.33	10.51	11.23	12.39
	8H	14.51	15.20	15.42	16.12	17.27	9.70	10.39	10.61	11.31	12.46
	12H	14.58	15.23	15.49	16.14	17.32	9.75	10.40	10.67	11.32	12.50
4H	2H	11.68	12.47	12.58	13.36	14.51	8.23	9.02	9.13	9.91	11.06
	3H	13.52	14.18	14.43	15.10	16.26	9.60	10.25	10.50	11.17	12.33
	4H	14.22	14.81	15.14	15.74	16.92	10.15	10.74	11.07	11.66	12.85
	6H	14.74	15.25	15.67	16.20	17.38	10.58	11.09	11.51	12.03	13.22
	8H	14.92	15.40	15.85	16.34	17.53	10.71	11.19	11.64	12.12	13.32
	12H	15.02	15.45	15.97	16.41	17.61	10.78	11.21	11.73	12.17	13.37
8H	4H	14.20	14.67	15.13	15.61	16.81	10.44	10.91	11.37	11.85	13.05
	6H	14.77	15.16	15.73	16.14	17.34	10.96	11.36	11.92	12.34	13.53
	8H	14.98	15.33	15.95	16.30	17.52	11.15	11.50	12.12	12.47	13.69
	12H	15.13	15.44	16.10	16.40	17.66	11.28	11.59	12.25	12.55	13.81
12H	4H	14.15	14.58	15.10	15.54	16.74	10.45	10.88	11.40	11.83	13.04
	6H	14.74	15.09	15.71	16.06	17.28	11.01	11.36	11.98	12.33	13.55
	8H	14.97	15.28	15.94	16.24	17.50	11.23	11.54	12.20	12.50	13.76