

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: P910854

Luminaire Tested: DFN2DIP-HX3F0-090D050US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

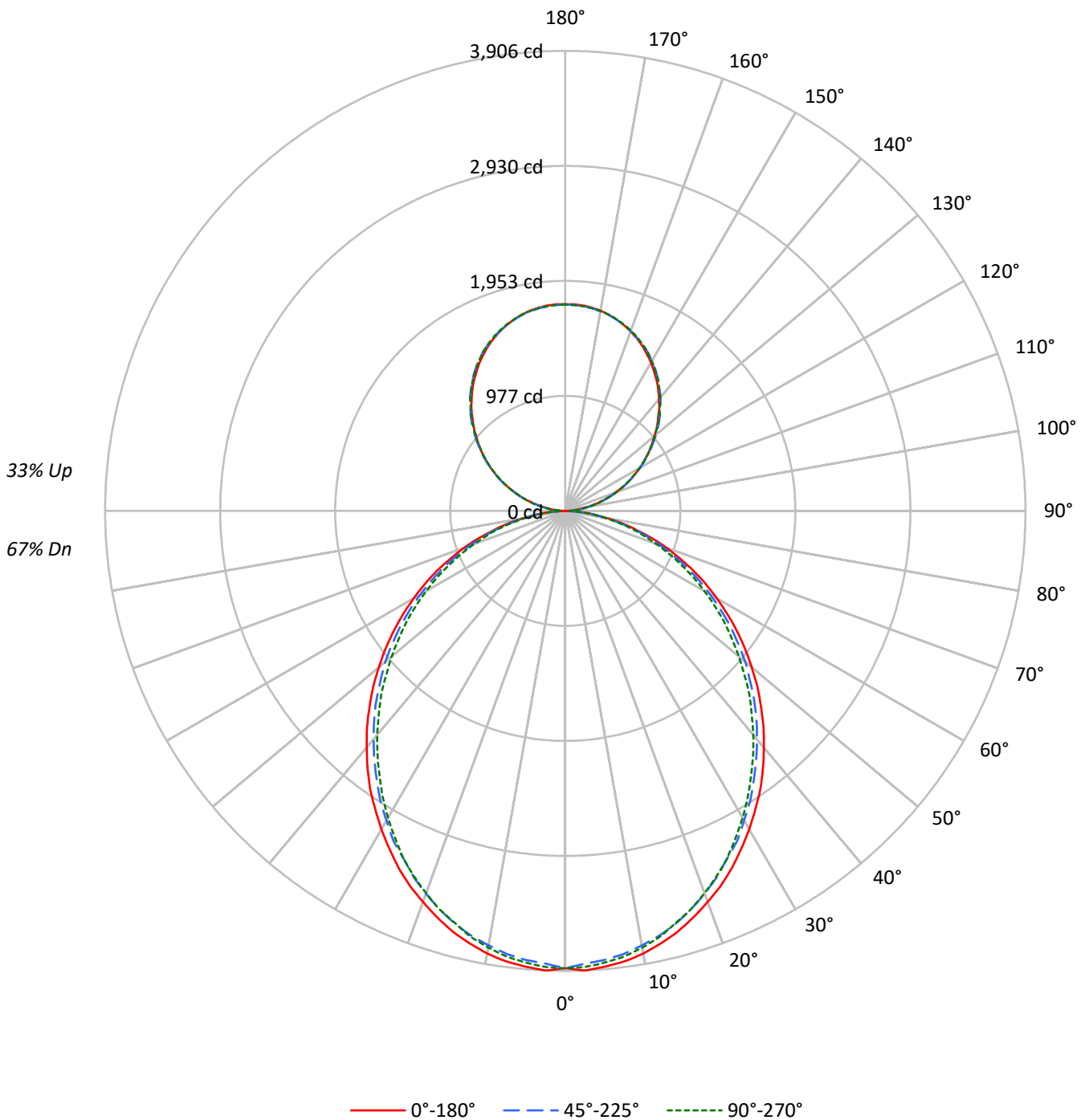
Test Method: LM-79-2019  
Report Number: P910854  
REPORT IS A COMBINATION OF REPORTS P899241 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-090D050US850-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14788.6 lumens  
Efficiency: N/A  
Efficacy: 114.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 129.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	72	72	72	67	67	67	67
1	102	97	93	90	96	92	88	85	81	79	76	72	70	68	63	62	61	56	56	56	56
2	93	85	79	73	87	80	75	70	71	67	63	63	60	57	56	53	51	47	47	47	47
3	84	75	67	61	79	71	64	58	63	58	53	56	52	48	49	46	43	40	40	40	40
4	77	66	58	52	73	63	55	50	56	50	45	50	45	41	44	41	37	34	34	34	34
5	71	59	51	45	67	56	48	43	50	44	39	45	40	36	40	36	33	30	30	30	30
6	66	53	45	39	62	50	43	37	45	39	34	41	35	32	36	32	29	26	26	26	26
7	61	48	40	34	57	46	38	33	41	35	30	37	32	28	33	29	26	23	23	23	23
8	56	44	36	30	53	42	34	29	38	32	27	34	29	25	30	26	23	21	21	21	21
9	53	40	32	27	50	38	31	26	35	29	24	31	26	23	28	24	21	19	19	19	19
10	49	37	29	24	46	35	28	24	32	26	22	29	24	20	26	22	19	17	17	17	17

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	4499	4499	4499
5°	4504	4433	4463
10°	4465	4370	4400
15°	4398	4295	4303
20°	4307	4192	4204
25°	4216	4069	4090
30°	4104	3955	3946
35°	3997	3820	3793
40°	3865	3684	3647
45°	3734	3548	3498
50°	3591	3405	3326
55°	3440	3239	3167
60°	3270	3043	2985
65°	3084	2839	2769
70°	2848	2590	2537
75°	2520	2292	2319
80°	2124	1911	1910
85°	1506	1265	1239

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3734 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	365.5	2.5
10°-20°	1028.5	7.0
20°-30°	1511.4	10.2
30°-40°	1755.4	11.9
40°-50°	1753.3	11.9
50°-60°	1528.8	10.3
60°-70°	1130.1	7.6
70°-80°	639.4	4.3
80°-90°	173.7	1.2
90°-100°	108.5	0.7
100°-110°	344.8	2.3
110°-120°	590.1	4.0
120°-130°	776.0	5.2
130°-140°	871.0	5.9
140°-150°	854.2	5.8
150°-160°	716.5	4.8
160°-170°	475.2	3.2
170°-180°	166.1	1.1
0°-30°	2905.4	19.6
0°-40°	4660.9	31.5
0°-60°	7942.9	53.7
0°-90°	9886.2	66.9
90°-120°	1043.4	7.1
90°-150°	3544.6	24.0
90°-180°	4902.0	33.1
0°-180°	14788.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3884	3884	3884	3884	3884	
5°	3884	3869	3828	3858	3850	369
15°	3697	3675	3626	3641	3622	1041
25°	3346	3316	3253	3260	3253	1540
35°	2887	2850	2790	2767	2748	1803
45°	2349	2323	2267	2226	2211	1813
55°	1778	1755	1710	1666	1647	1589
65°	1199	1176	1139	1106	1087	1185
75°	627	620	601	579	586	670
85°	153	149	146	134	131	171
90°	2	19	52	49	50	14
95°	77	92	95	95	92	86
105°	318	322	326	328	328	336
115°	592	601	598	596	592	586
125°	861	874	870	866	864	770
135°	1114	1130	1134	1132	1128	861
145°	1352	1363	1371	1373	1367	845
155°	1546	1551	1555	1563	1558	712
165°	1682	1681	1681	1691	1684	475
175°	1751	1746	1743	1754	1745	166
180°	1754	1754	1754	1754	1754	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3883.6	3883.6	3883.6	3883.6	3883.6
2.5°	3906.2	3887.6	3846.5	3883.6	3876.5
5°	3883.6	3869.0	3827.8	3857.5	3850.3
7.5°	3857.5	3835.4	3794.1	3824.3	3816.7
10°	3816.7	3790.6	3745.8	3775.5	3764.4
12.5°	3760.4	3738.2	3693.5	3712.0	3704.6
15°	3697.1	3674.9	3626.1	3641.2	3622.5
17.5°	3618.6	3596.4	3547.7	3566.3	3547.7
20°	3532.6	3510.4	3458.1	3469.2	3454.5
22.5°	3447.0	3413.4	3364.6	3364.6	3357.1
25°	3346.0	3316.2	3252.9	3260.0	3252.9
27.5°	3233.8	3207.7	3159.4	3148.3	3129.7
30°	3122.2	3092.0	3036.1	3025.0	3010.0
32.5°	3002.5	2980.3	2920.4	2897.9	2882.8
35°	2886.8	2849.6	2789.7	2767.2	2748.5
37.5°	2756.1	2722.4	2662.5	2636.4	2617.8
40°	2621.7	2591.6	2531.7	2498.5	2483.5
42.5°	2490.9	2460.9	2401.4	2363.8	2341.7
45°	2349.1	2323.0	2266.7	2225.9	2210.9
47.5°	2210.9	2184.7	2124.8	2083.7	2061.5
50°	2065.1	2046.4	1994.1	1941.9	1923.2
52.5°	1923.2	1897.1	1848.7	1807.6	1781.4
55°	1777.8	1755.2	1710.4	1665.7	1647.1
57.5°	1632.0	1613.4	1564.7	1519.9	1504.8
60°	1486.2	1471.5	1419.2	1378.0	1367.0
62.5°	1344.3	1318.2	1280.9	1243.7	1228.7
65°	1198.9	1176.3	1139.1	1105.5	1086.8
67.5°	1049.6	1030.6	997.2	971.2	956.1
70°	911.3	896.2	862.6	836.4	821.8
72.5°	769.4	754.3	735.7	709.6	698.6
75°	627.3	620.0	601.1	578.9	586.4
77.5°	500.4	485.4	477.9	466.8	455.7
80°	373.6	369.6	362.1	351.0	343.6
82.5°	254.0	254.0	250.4	235.3	235.3
85°	152.9	149.4	145.8	134.3	130.8
87.5°	67.3	59.8	52.3	41.3	37.3
90°	1.6	19.1	51.8	48.7	50.2
92.5°	32.8	44.4	46.0	47.6	47.6
95°	77.2	92.0	94.6	94.6	92.0
97.5°	128.4	142.2	148.1	148.1	148.1
100°	187.6	199.8	204.1	204.1	202.5
102.5°	250.1	259.1	264.8	266.5	264.8
105°	318.3	322.5	325.7	328.3	328.3
107.5°	385.9	392.3	392.3	393.4	385.9
110°	451.5	460.0	460.0	460.0	455.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	522.3	531.3	529.8	525.6	522.3
115°	592.1	600.6	598.0	596.4	592.1
117.5°	661.4	673.1	665.6	661.4	657.2
120°	731.2	742.8	731.2	731.2	726.4
122.5°	794.6	809.5	802.0	797.8	794.6
125°	861.2	874.4	870.2	865.5	863.9
127.5°	926.2	942.6	936.9	930.5	926.2
130°	987.1	1006.1	1003.4	1000.3	994.4
132.5°	1055.3	1070.1	1071.2	1063.8	1059.5
135°	1114.0	1130.3	1133.5	1132.0	1127.7
137.5°	1179.5	1192.7	1195.4	1194.3	1188.0
140°	1237.1	1250.4	1257.7	1257.7	1252.0
142.5°	1296.3	1309.6	1313.8	1315.4	1309.6
145°	1352.4	1363.0	1371.4	1373.1	1367.2
147.5°	1402.7	1415.9	1422.2	1424.8	1419.0
150°	1454.5	1463.4	1469.2	1474.0	1469.2
152.5°	1500.5	1509.5	1516.8	1522.7	1516.8
155°	1546.4	1550.6	1555.4	1562.8	1558.0
157.5°	1586.1	1589.2	1591.9	1602.5	1595.1
160°	1621.5	1624.7	1626.2	1635.2	1628.9
162.5°	1654.3	1654.3	1655.8	1665.9	1658.5
165°	1682.4	1680.7	1680.7	1691.3	1683.9
167.5°	1707.6	1702.9	1702.9	1713.5	1706.1
170°	1726.7	1722.5	1720.9	1731.5	1722.5
172.5°	1739.9	1735.7	1734.1	1744.7	1735.7
175°	1750.6	1746.2	1743.1	1753.7	1744.7
177.5°	1756.3	1752.1	1748.9	1757.9	1748.9
180°	1753.7	1753.7	1753.7	1753.7	1753.7



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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	13.88	14.91	14.68	15.73	16.74	13.45	14.49	14.25	15.31	16.31
	3H	15.54	16.47	16.35	17.30	18.34	15.07	16.01	15.89	16.84	17.87
	4H	16.13	17.01	16.96	17.85	18.90	15.67	16.54	16.49	17.38	18.43
	6H	16.54	17.35	17.38	18.19	19.26	16.07	16.88	16.91	17.72	18.78
	8H	16.64	17.42	17.49	18.28	19.34	16.17	16.95	17.02	17.81	18.87
	12H	16.69	17.43	17.55	18.29	19.38	16.22	16.96	17.07	17.81	18.90
4H	2H	14.36	15.24	15.19	16.07	17.12	14.01	14.89	14.85	15.73	16.78
	3H	16.23	16.96	17.07	17.84	18.90	15.84	16.57	16.68	17.45	18.51
	4H	16.95	17.61	17.80	18.48	19.57	16.54	17.21	17.40	18.08	19.17
	6H	17.46	18.04	18.34	18.93	20.03	17.06	17.64	17.93	18.53	19.62
	8H	17.61	18.15	18.49	19.04	20.15	17.21	17.75	18.08	18.63	19.74
	12H	17.69	18.18	18.59	19.09	20.20	17.27	17.76	18.17	18.67	19.78
8H	4H	17.15	17.69	18.03	18.58	19.69	16.80	17.34	17.67	18.22	19.33
	6H	17.78	18.23	18.69	19.16	20.27	17.42	17.87	18.33	18.80	19.91
	8H	18.00	18.40	18.91	19.32	20.44	17.63	18.03	18.55	18.95	20.08
	12H	18.13	18.48	19.05	19.40	20.57	17.75	18.10	18.67	19.02	20.20
12H	4H	17.15	17.63	18.04	18.54	19.65	16.80	17.28	17.69	18.19	19.30
	6H	17.81	18.21	18.73	19.13	20.26	17.46	17.86	18.38	18.78	19.91
	8H	18.06	18.41	18.97	19.32	20.50	17.70	18.05	18.62	18.97	20.14