

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: P924462

Luminaire Tested: DFN2DIP-HX3F0-080D030US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

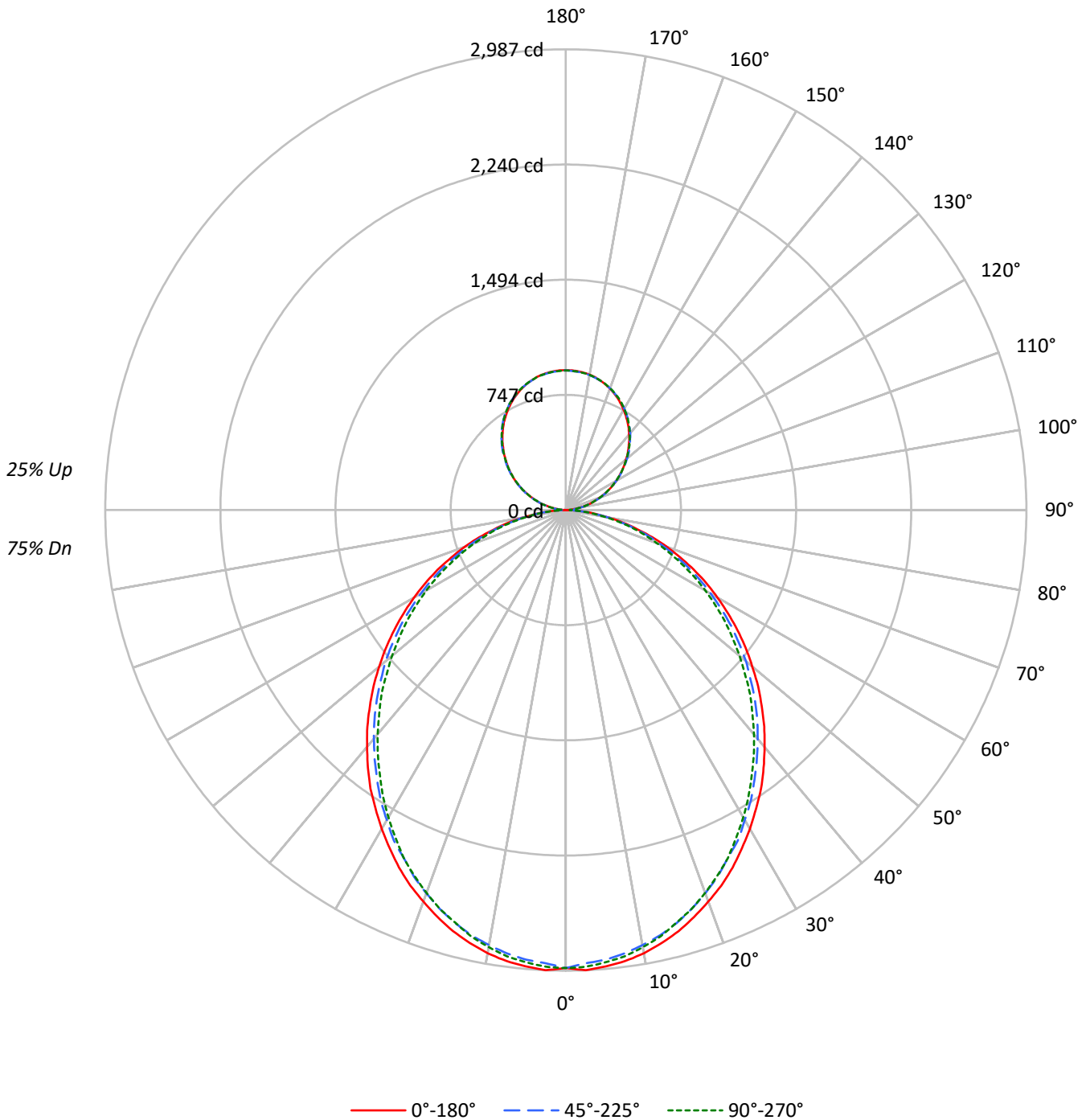
Test Method: LM-79-2019  
Report Number: P924462  
REPORT IS A COMBINATION OF REPORTS P899211 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-080D030US950-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10088.5 lumens  
Efficiency: N/A  
Efficacy: 98.0 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): 102.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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	113	113	113	113	108	108	108	108	97	97	97	88	88	88	79	79	79	79	79	79	75
1	103	99	95	91	98	94	91	87	85	83	80	77	75	73	70	68	67	67	67	67	63
2	94	86	80	75	89	82	77	72	75	70	66	68	64	61	62	59	56	56	56	56	53
3	86	76	68	62	81	73	66	60	66	61	56	60	56	52	55	51	48	48	48	48	45
4	79	67	59	53	75	64	57	51	59	53	48	54	49	45	49	45	41	41	41	41	38
5	72	60	52	45	69	58	50	44	53	46	41	48	43	39	44	40	36	36	36	36	33
6	67	54	46	40	63	52	44	39	48	41	36	44	38	34	40	35	32	32	32	32	29
7	62	49	41	35	59	47	39	34	43	37	32	40	34	30	37	32	28	28	28	28	26
8	58	45	37	31	55	43	36	30	40	33	29	37	31	27	34	29	25	25	25	25	23
9	54	41	33	28	51	39	32	27	36	30	26	34	28	24	31	26	23	23	23	23	21
10	50	38	30	25	48	36	29	25	34	28	23	31	26	22	29	24	21	21	21	21	19

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

	0°	45°	90°
0°	3440	3440	3440
5°	3444	3390	3413
10°	3414	3342	3365
15°	3363	3284	3291
20°	3293	3205	3215
25°	3224	3112	3128
30°	3138	3024	3017
35°	3056	2921	2900
40°	2956	2817	2789
45°	2855	2713	2675
50°	2746	2603	2543
55°	2631	2477	2421
60°	2500	2327	2282
65°	2358	2171	2118
70°	2177	1981	1940
75°	1927	1753	1773
80°	1625	1462	1460
85°	1153	968	947

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2855 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	279.5	2.8
10°-20°	786.4	7.8
20°-30°	1155.7	11.5
30°-40°	1342.3	13.3
40°-50°	1340.6	13.3
50°-60°	1169.0	11.6
60°-70°	864.1	8.6
70°-80°	488.9	4.8
80°-90°	131.6	1.3
90°-100°	56.0	0.6
100°-110°	178.0	1.8
110°-120°	304.6	3.0
120°-130°	400.5	4.0
130°-140°	449.6	4.5
140°-150°	440.9	4.4
150°-160°	369.8	3.7
160°-170°	245.3	2.4
170°-180°	85.7	0.8
0°-30°	2221.6	22.0
0°-40°	3563.9	35.3
0°-60°	6073.6	60.2
0°-90°	7558.3	74.9
90°-120°	538.5	5.3
90°-150°	1829.5	18.1
90°-180°	2530.0	25.1
0°-180°	10088.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2970	2970	2970	2970	2970	
5°	2970	2958	2927	2950	2944	282
15°	2827	2810	2773	2784	2770	796
25°	2558	2536	2487	2493	2487	1177
35°	2207	2179	2133	2116	2102	1378
45°	1796	1776	1733	1702	1691	1386
55°	1359	1342	1308	1274	1259	1215
65°	917	900	871	845	831	906
75°	480	474	460	443	448	512
85°	117	114	112	103	100	130
90°	1	10	27	25	26	10
95°	40	48	49	49	48	44
105°	164	166	168	169	169	173
115°	306	310	309	308	306	302
125°	445	451	449	447	446	397
135°	575	583	585	584	582	444
145°	698	704	708	709	706	436
155°	798	800	803	807	804	367
165°	868	868	868	873	869	245
175°	904	901	900	905	900	86
180°	905	905	905	905	905	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2969.6	2969.6	2969.6	2969.6	2969.6
2.5°	2986.9	2972.7	2941.2	2969.6	2964.2
5°	2969.6	2958.4	2927.0	2949.7	2944.2
7.5°	2949.7	2932.7	2901.2	2924.2	2918.5
10°	2918.5	2898.4	2864.2	2886.9	2878.5
12.5°	2875.5	2858.5	2824.2	2838.4	2832.7
15°	2827.0	2810.0	2772.7	2784.2	2770.0
17.5°	2767.0	2750.0	2712.7	2727.0	2712.7
20°	2701.3	2684.3	2644.3	2652.8	2641.5
22.5°	2635.8	2610.0	2572.7	2572.7	2567.0
25°	2558.5	2535.8	2487.4	2492.8	2487.4
27.5°	2472.8	2452.8	2415.8	2407.3	2393.1
30°	2387.4	2364.3	2321.7	2313.2	2301.6
32.5°	2295.9	2278.9	2233.1	2215.9	2204.4
35°	2207.4	2178.9	2133.1	2115.9	2101.7
37.5°	2107.4	2081.6	2035.9	2015.9	2001.7
40°	2004.7	1981.6	1936.0	1910.5	1898.9
42.5°	1904.8	1881.7	1836.3	1807.4	1790.6
45°	1796.3	1776.3	1733.2	1702.0	1690.6
47.5°	1690.6	1670.5	1624.8	1593.3	1576.3
50°	1579.1	1564.8	1524.8	1484.8	1470.6
52.5°	1470.6	1450.6	1413.6	1382.2	1362.1
55°	1359.4	1342.1	1307.9	1273.7	1259.4
57.5°	1247.9	1233.7	1196.4	1162.2	1150.6
60°	1136.4	1125.2	1085.2	1053.7	1045.2
62.5°	1027.9	1008.0	979.5	951.0	939.5
65°	916.8	899.5	871.0	845.2	831.0
67.5°	802.5	788.0	762.5	742.6	731.1
70°	696.8	685.3	659.6	639.6	628.3
72.5°	588.3	576.9	562.6	542.6	534.1
75°	479.6	474.1	459.6	442.7	448.4
77.5°	382.6	371.1	365.4	356.9	348.4
80°	285.7	282.7	276.9	268.5	262.6
82.5°	194.2	194.2	191.5	179.9	179.9
85°	117.0	114.2	111.5	102.7	100.0
87.5°	51.5	45.8	40.0	31.5	28.5
90°	0.9	9.8	26.7	25.1	25.9
92.5°	16.9	22.9	23.8	24.5	24.5
95°	39.9	47.5	48.8	48.8	47.5
97.5°	66.3	73.4	76.4	76.4	76.4
100°	96.8	103.1	105.3	105.3	104.6
102.5°	129.1	133.8	136.7	137.6	136.7
105°	164.3	166.5	168.1	169.4	169.4
107.5°	199.2	202.4	202.4	203.0	199.2
110°	233.1	237.5	237.5	237.5	235.3



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	269.6	274.3	273.4	271.2	269.6
115°	305.7	310.0	308.6	307.9	305.7
117.5°	341.3	347.4	343.5	341.3	339.1
120°	377.4	383.4	377.4	377.4	374.9
122.5°	410.1	417.8	413.9	411.7	410.1
125°	444.6	451.3	449.1	446.7	445.9
127.5°	478.0	486.5	483.6	480.2	478.0
130°	509.4	519.3	517.9	516.3	513.3
132.5°	544.6	552.3	552.8	549.0	546.8
135°	575.0	583.4	585.1	584.2	582.0
137.5°	608.7	615.6	617.0	616.5	613.1
140°	638.5	645.4	649.2	649.2	646.1
142.5°	669.1	675.9	678.1	679.0	675.9
145°	698.0	703.5	707.9	708.6	705.7
147.5°	724.0	730.8	734.0	735.4	732.4
150°	750.7	755.4	758.3	760.8	758.3
152.5°	774.5	779.0	782.9	785.9	782.9
155°	798.2	800.3	802.8	806.6	804.2
157.5°	818.6	820.2	821.7	827.1	823.3
160°	836.9	838.6	839.4	844.0	840.8
162.5°	853.8	853.8	854.7	859.8	856.0
165°	868.3	867.5	867.5	872.9	869.1
167.5°	881.4	878.9	878.9	884.4	880.5
170°	891.2	889.0	888.3	893.7	889.0
172.5°	898.0	895.9	895.0	900.5	895.9
175°	903.5	901.3	899.7	905.2	900.5
177.5°	906.5	904.3	902.7	907.3	902.7
180°	905.2	905.2	905.2	905.2	905.2



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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	13.56	14.70	14.27	15.43	16.29	13.13	14.27	13.84	15.00	15.87
	3H	15.23	16.26	15.96	17.00	17.89	14.76	15.79	15.49	16.53	17.43
	4H	15.83	16.80	16.57	17.54	18.45	15.36	16.33	16.10	17.08	17.99
	6H	16.24	17.13	16.99	17.89	18.81	15.77	16.66	16.52	17.42	18.34
	8H	16.35	17.20	17.11	17.98	18.90	15.88	16.73	16.64	17.51	18.43
	12H	16.40	17.21	17.17	17.98	18.94	15.93	16.74	16.70	17.51	18.46
4H	2H	14.05	15.02	14.80	15.77	16.68	13.71	14.68	14.45	15.43	16.33
	3H	15.93	16.74	16.69	17.53	18.45	15.54	16.35	16.30	17.14	18.06
	4H	16.65	17.39	17.43	18.17	19.13	16.25	16.99	17.02	17.77	18.73
	6H	17.18	17.81	17.97	18.62	19.59	16.77	17.41	17.56	18.22	19.18
	8H	17.33	17.92	18.12	18.73	19.70	16.92	17.52	17.72	18.32	19.30
	12H	17.41	17.95	18.23	18.78	19.76	17.00	17.53	17.81	18.36	19.34
8H	4H	16.87	17.46	17.66	18.27	19.24	16.51	17.11	17.31	17.91	18.89
	6H	17.50	18.00	18.33	18.84	19.82	17.14	17.64	17.97	18.49	19.46
	8H	17.72	18.16	18.56	19.01	20.00	17.36	17.80	18.19	18.64	19.63
	12H	17.86	18.25	18.70	19.08	20.13	17.48	17.87	18.32	18.70	19.75
12H	4H	16.87	17.40	17.68	18.23	19.21	16.52	17.05	17.33	17.88	18.86
	6H	17.53	17.97	18.37	18.82	19.81	17.18	17.62	18.02	18.47	19.46
	8H	17.78	18.17	18.62	19.01	20.05	17.43	17.82	18.27	18.65	19.70