

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: P908269

Luminaire Tested: DFN2DIP-HX4F0-110D040US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

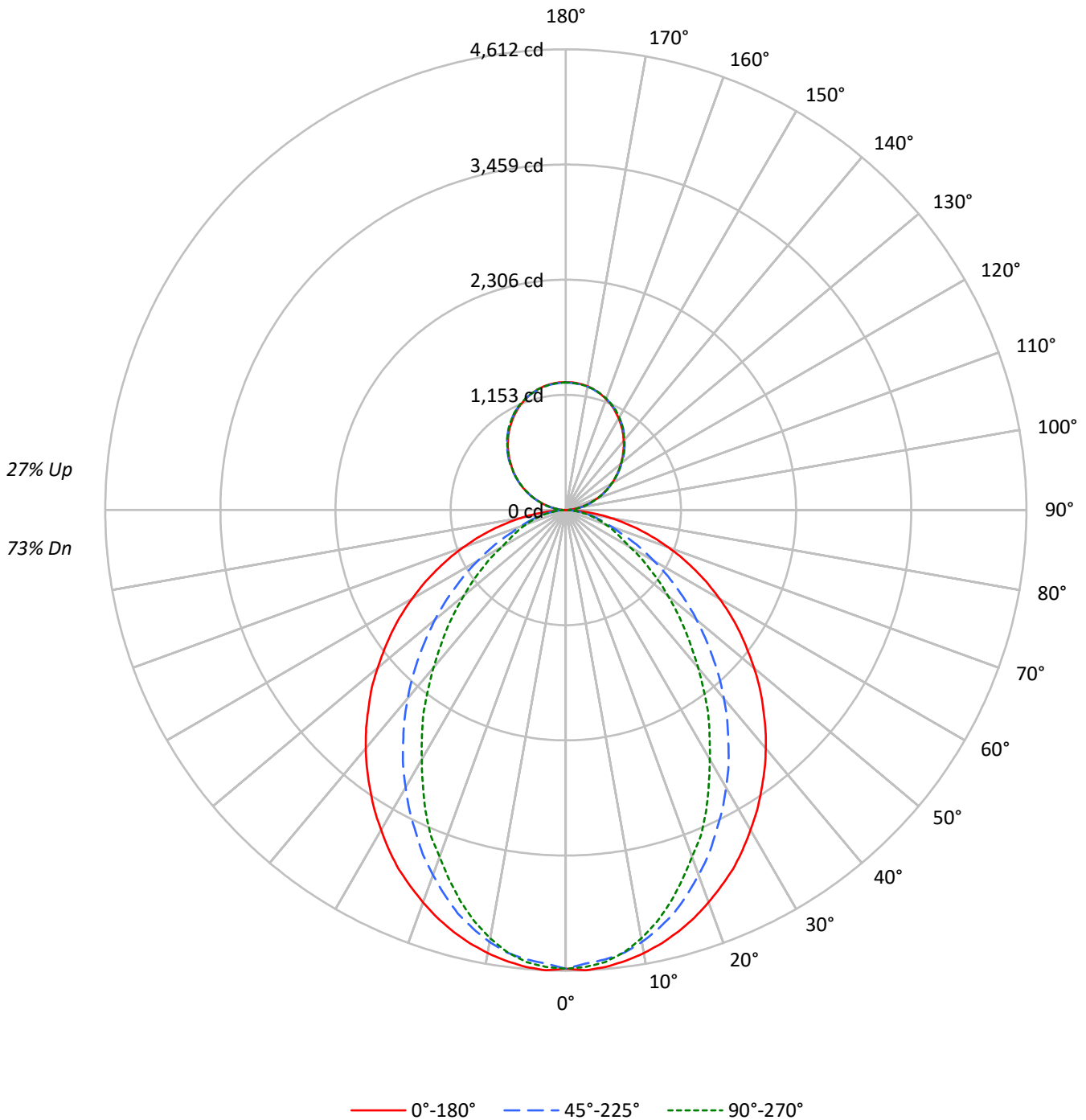
Test Method: LM-79-2019  
Report Number: P908269  
REPORT IS A COMBINATION OF REPORTS P899314 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-110D040US840-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13017.2 lumens  
Efficiency: N/A  
Efficacy: 95.7 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): 136  
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	113	113	113	113	107	107	107	107	96	96	96	86	86	86	77	77	77	77	77	77	73
1	104	99	96	92	98	94	91	88	85	83	80	77	75	73	69	68	66	66	66	66	63
2	95	88	82	77	90	83	78	74	76	71	68	68	65	62	62	59	57	57	57	57	54
3	87	78	70	65	82	74	68	62	67	62	58	61	57	53	55	52	49	49	49	49	46
4	80	69	61	55	76	66	59	54	60	55	50	55	50	47	50	46	43	43	43	43	40
5	74	62	54	48	70	60	52	47	54	48	44	50	45	41	45	41	38	38	38	38	35
6	68	56	48	42	65	54	47	41	49	43	39	45	40	36	41	37	34	34	34	34	31
7	64	51	43	38	60	49	42	37	45	39	34	41	36	32	38	34	30	30	30	30	28
8	59	47	39	34	56	45	38	33	41	35	31	38	33	29	35	31	28	28	28	28	25
9	55	43	35	30	53	41	34	30	38	32	28	35	30	27	33	28	25	25	25	25	23
10	52	40	32	28	49	38	31	27	35	30	26	33	28	24	30	26	23	23	23	23	21

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

	0°	45°	90°
0°	3414	3414	3414
5°	3420	3360	3381
10°	3386	3294	3271
15°	3340	3186	3102
20°	3278	3036	2893
25°	3215	2868	2692
30°	3131	2696	2436
35°	3048	2511	2212
40°	2964	2319	1954
45°	2866	2106	1721
50°	2765	1892	1493
55°	2659	1662	1274
60°	2537	1422	1049
65°	2396	1178	944
70°	2226	950	855
75°	2012	838	778
80°	1702	704	675
85°	1190	472	509

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2866 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	430.3	3.3
10°-20°	1181.2	9.1
20°-30°	1658.4	12.7
30°-40°	1807.8	13.9
40°-50°	1661.5	12.8
50°-60°	1304.9	10.0
60°-70°	849.4	6.5
70°-80°	437.2	3.4
80°-90°	115.3	0.9
90°-100°	79.1	0.6
100°-110°	251.2	1.9
110°-120°	429.8	3.3
120°-130°	565.3	4.3
130°-140°	634.5	4.9
140°-150°	622.2	4.8
150°-160°	522.0	4.0
160°-170°	346.2	2.7
170°-180°	121.0	0.9
0°-30°	3269.9	25.1
0°-40°	5077.7	39.0
0°-60°	8044.1	61.8
0°-90°	9445.9	72.6
90°-120°	760.1	5.8
90°-150°	2582.2	19.8
90°-180°	3571.0	27.4
0°-180°	13017.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4591	4591	4591	4591	4591	
5°	4591	4570	4516	4554	4541	435
15°	4367	4321	4180	4101	4060	1231
25°	3964	3831	3556	3386	3324	1823
35°	3416	3203	2838	2576	2484	2138
45°	2792	2514	2078	1782	1683	2156
55°	2123	1799	1350	1101	1022	1897
65°	1434	1097	723	582	569	1421
75°	764	473	332	303	299	808
85°	178	91	79	79	79	205
90°	1	14	38	35	37	13
95°	56	67	69	69	67	63
105°	232	235	237	239	239	245
115°	431	438	436	434	431	427
125°	627	637	634	630	629	561
135°	812	823	826	825	822	627
145°	985	993	999	1000	996	616
155°	1126	1130	1133	1138	1135	519
165°	1226	1224	1224	1232	1227	346
175°	1275	1272	1270	1278	1271	121
180°	1278	1278	1278	1278	1278	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4591.2	4591.2	4591.2	4591.2	4591.2
2.5°	4611.9	4591.2	4545.3	4587.2	4578.8
5°	4591.2	4570.4	4516.2	4553.7	4541.4
7.5°	4553.7	4528.9	4470.8	4487.1	4466.3
10°	4503.9	4474.7	4391.9	4379.1	4354.4
12.5°	4441.7	4404.2	4291.8	4267.1	4221.2
15°	4366.8	4320.9	4179.8	4101.0	4059.5
17.5°	4279.5	4213.0	4038.4	3947.1	3880.5
20°	4179.8	4096.5	3888.9	3785.3	3693.6
22.5°	4071.9	3976.1	3735.1	3594.0	3531.8
25°	3963.8	3830.7	3556.5	3386.4	3323.8
27.5°	3835.2	3693.6	3390.3	3195.0	3099.4
30°	3698.0	3539.8	3207.4	2995.8	2883.4
32.5°	3564.9	3373.6	3033.2	2783.8	2679.8
35°	3415.5	3203.4	2838.0	2576.2	2484.5
37.5°	3270.0	3041.2	2655.0	2368.0	2264.5
40°	3116.1	2867.1	2463.8	2168.8	2060.8
42.5°	2958.3	2692.5	2272.9	1965.2	1861.6
45°	2792.2	2513.6	2077.6	1782.2	1682.6
47.5°	2634.3	2339.5	1890.7	1595.3	1504.1
50°	2459.7	2164.8	1707.8	1420.8	1333.9
52.5°	2289.2	1977.5	1533.2	1259.0	1180.0
55°	2122.9	1799.0	1350.2	1101.2	1022.3
57.5°	1952.9	1620.4	1188.4	955.7	889.1
60°	1778.3	1445.9	1017.8	806.3	739.7
62.5°	1608.1	1275.8	872.4	673.2	640.1
65°	1433.5	1096.7	723.0	581.9	569.1
67.5°	1267.4	930.6	581.9	510.9	498.6
70°	1092.8	768.8	481.8	440.4	423.6
72.5°	926.6	618.9	402.9	369.8	361.4
75°	764.4	473.4	332.3	303.3	299.3
77.5°	602.6	336.4	261.9	245.1	236.7
80°	452.7	241.2	199.2	183.0	183.0
82.5°	315.6	162.2	137.1	128.8	128.8
85°	178.5	91.3	78.9	78.9	78.9
87.5°	66.6	33.0	33.0	29.1	29.1
90°	1.1	13.8	37.8	35.4	36.6
92.5°	23.8	32.3	33.5	34.6	34.6
95°	56.2	67.1	69.0	69.0	67.1
97.5°	93.6	103.6	107.9	107.9	107.9
100°	136.7	145.6	148.7	148.7	147.5
102.5°	182.2	188.7	193.0	194.1	193.0
105°	231.9	234.9	237.2	239.1	239.1
107.5°	281.1	285.8	285.8	286.5	281.1
110°	328.9	335.1	335.1	335.1	332.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	380.5	387.1	385.9	382.8	380.5
115°	431.3	437.6	435.6	434.4	431.3
117.5°	481.8	490.3	484.9	481.8	478.8
120°	532.7	541.1	532.7	532.7	529.2
122.5°	578.9	589.7	584.3	581.2	578.9
125°	627.4	637.0	634.0	630.5	629.3
127.5°	674.8	686.7	682.5	677.8	674.8
130°	719.0	733.0	731.0	728.7	724.5
132.5°	768.7	779.5	780.3	774.9	771.8
135°	811.5	823.4	825.8	824.6	821.5
137.5°	859.3	868.9	870.8	870.0	865.5
140°	901.2	910.9	916.3	916.3	912.0
142.5°	944.4	954.0	957.0	958.3	954.0
145°	985.2	992.9	999.1	1000.3	996.0
147.5°	1021.8	1031.4	1036.0	1037.9	1033.7
150°	1059.6	1066.1	1070.4	1073.8	1070.4
152.5°	1093.1	1099.5	1105.0	1109.2	1105.0
155°	1126.5	1129.6	1133.1	1138.5	1135.0
157.5°	1155.5	1157.7	1159.6	1167.4	1162.0
160°	1181.2	1183.6	1184.7	1191.2	1186.6
162.5°	1205.1	1205.1	1206.3	1213.6	1208.2
165°	1225.6	1224.4	1224.4	1232.0	1226.7
167.5°	1244.1	1240.5	1240.5	1248.3	1242.8
170°	1257.9	1254.8	1253.6	1261.3	1254.8
172.5°	1267.5	1264.5	1263.2	1271.0	1264.5
175°	1275.3	1272.1	1269.8	1277.5	1271.0
177.5°	1279.5	1276.4	1274.0	1280.6	1274.0
180°	1277.5	1277.5	1277.5	1277.5	1277.5



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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	13.30	14.36	14.05	15.12	16.03	9.28	10.33	10.02	11.09	12.00
	3H	15.00	15.94	15.76	16.71	17.66	10.48	11.43	11.24	12.20	13.14
	4H	15.62	16.51	16.39	17.29	18.24	10.95	11.84	11.72	12.61	13.57
	6H	16.05	16.87	16.84	17.66	18.63	11.28	12.10	12.07	12.89	13.86
	8H	16.19	16.97	16.98	17.77	18.74	11.38	12.16	12.18	12.96	13.93
	12H	16.26	17.00	17.06	17.80	18.79	11.43	12.17	12.23	12.97	13.97
4H	2H	13.35	14.24	14.13	15.02	15.97	9.90	10.79	10.68	11.57	12.52
	3H	15.20	15.94	15.99	16.75	17.72	11.27	12.01	12.06	12.83	13.80
	4H	15.90	16.57	16.71	17.39	18.39	11.83	12.50	12.64	13.31	14.31
	6H	16.43	17.01	17.25	17.85	18.85	12.26	12.84	13.09	13.68	14.69
	8H	16.61	17.15	17.44	17.98	19.00	12.40	12.94	13.22	13.77	14.79
	12H	16.72	17.20	17.56	18.06	19.08	12.48	12.96	13.32	13.82	14.84
8H	4H	15.89	16.43	16.71	17.26	18.28	12.13	12.67	12.95	13.50	14.52
	6H	16.46	16.91	17.32	17.78	18.80	12.66	13.10	13.51	13.98	15.00
	8H	16.68	17.08	17.55	17.95	18.98	12.85	13.25	13.72	14.12	15.15
	12H	16.83	17.18	17.70	18.04	19.13	12.98	13.33	13.85	14.19	15.28
12H	4H	15.85	16.33	16.69	17.19	18.21	12.14	12.63	12.99	13.48	14.51
	6H	16.44	16.84	17.30	17.71	18.74	12.71	13.10	13.57	13.98	15.01
	8H	16.67	17.02	17.54	17.88	18.97	12.93	13.28	13.80	14.14	15.23