

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: P907996

Luminaire Tested: DFN2DIP-HX3F0-030D090US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

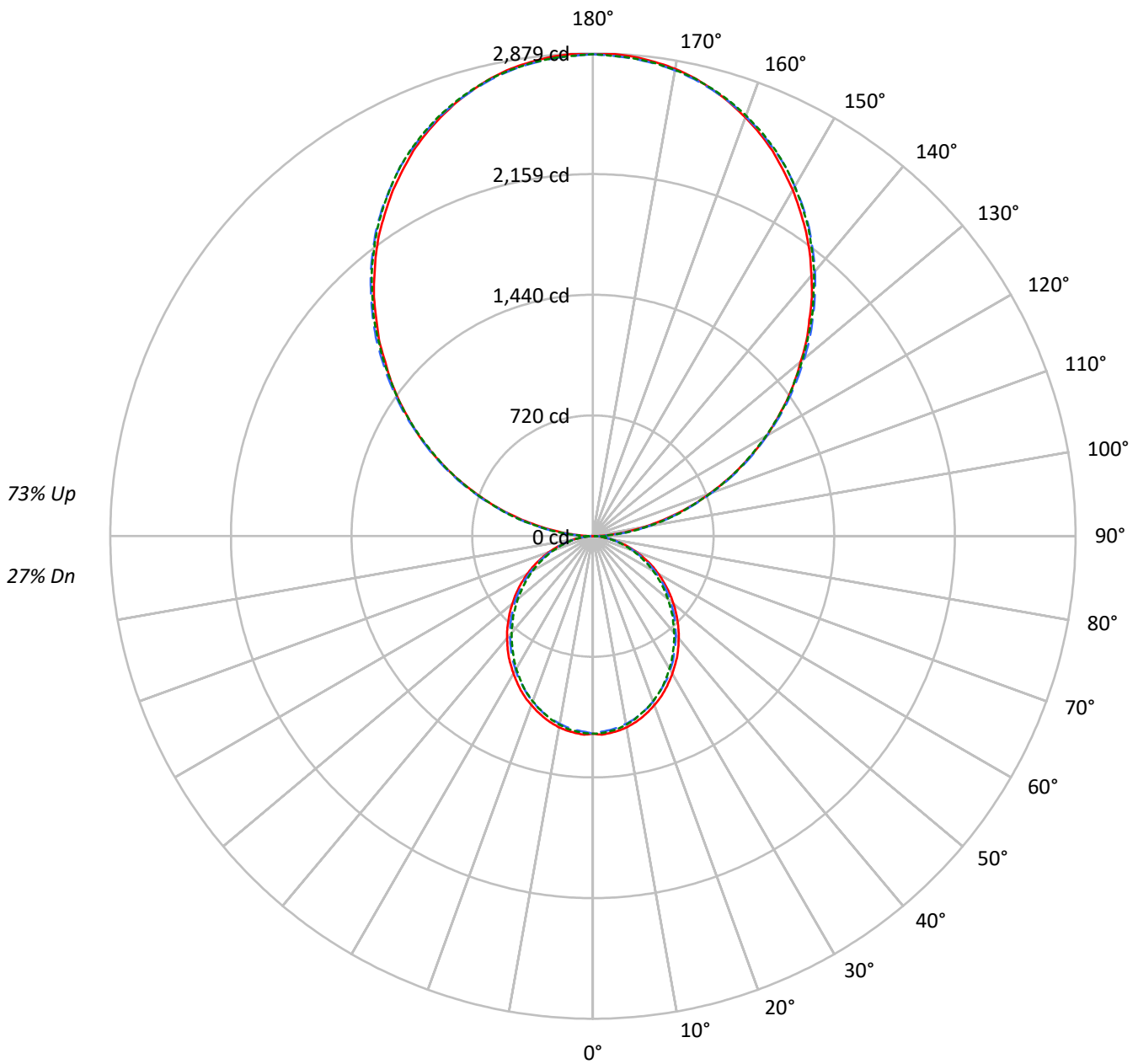
Test Method: LM-79-2019  
Report Number: P907996  
REPORT IS A COMBINATION OF REPORTS P899285 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-030D090US840-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11042.9 lumens  
Efficiency: N/A  
Efficacy: 116.5 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-Indirect  
  
Input Watts (W): 94.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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



— 0°-180°    - - 45°-225°    ···· 90°-270°



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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	102	102	102	102	91	91	91	91	71	71	71	52	52	52	35	35	35				27
1	93	88	85	81	83	79	76	73	62	60	58	46	44	43	31	30	30				23
2	84	77	71	66	75	69	64	60	54	51	48	40	38	36	27	26	25				19
3	77	68	61	55	68	61	55	50	48	44	40	35	33	30	24	23	21				16
4	70	60	52	47	62	54	47	42	42	38	34	32	29	26	22	20	18				14
5	64	53	45	40	57	48	41	36	38	33	29	28	25	22	19	17	16				12
6	59	48	40	34	53	43	36	31	34	29	25	25	22	20	18	16	14				11
7	55	43	35	30	49	39	32	27	31	26	22	23	20	17	16	14	12				9
8	51	39	31	26	45	35	28	24	28	23	20	21	18	15	15	13	11				8
9	47	35	28	23	42	32	26	21	25	21	17	19	16	14	14	11	10				8
10	44	32	25	21	39	29	23	19	23	19	16	18	15	12	13	10	9				7

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

	0°	45°	90°
0°	1365	1365	1365
5°	1367	1346	1355
10°	1355	1326	1336
15°	1335	1304	1306
20°	1307	1272	1276
25°	1280	1235	1241
30°	1246	1200	1198
35°	1213	1160	1151
40°	1173	1118	1107
45°	1134	1077	1062
50°	1090	1034	1010
55°	1044	983	961
60°	993	924	906
65°	936	862	841
70°	864	786	770
75°	765	696	704
80°	645	580	580
85°	458	384	376

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2704 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	111.0	1.0
10°-20°	312.2	2.8
20°-30°	458.8	4.2
30°-40°	532.8	4.8
40°-50°	532.2	4.8
50°-60°	464.1	4.2
60°-70°	343.1	3.1
70°-80°	194.1	1.8
80°-90°	59.4	0.5
90°-100°	177.9	1.6
100°-110°	565.2	5.1
110°-120°	967.2	8.8
120°-130°	1272.0	11.5
130°-140°	1427.7	12.9
140°-150°	1400.0	12.7
150°-160°	1174.4	10.6
160°-170°	778.9	7.1
170°-180°	272.2	2.5
0°-30°	881.9	8.0
0°-40°	1414.7	12.8
0°-60°	2411.0	21.8
0°-90°	3007.5	27.2
90°-120°	1710.2	15.5
90°-150°	5809.9	52.6
90°-180°	8035.0	72.8
0°-180°	11042.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1179	1179	1179	1179	1179	
5°	1179	1174	1162	1171	1169	112
15°	1122	1116	1101	1105	1100	316
25°	1016	1007	987	990	987	467
35°	876	865	847	840	834	547
45°	713	705	688	676	671	550
55°	540	533	519	506	500	482
65°	364	357	346	336	330	360
75°	190	188	182	176	178	203
85°	46	45	44	41	40	52
90°	3	31	85	80	82	11
95°	126	151	155	155	151	141
105°	522	529	534	538	538	551
115°	971	984	980	978	971	960
125°	1412	1433	1426	1419	1416	1261
135°	1826	1853	1858	1855	1848	1411
145°	2217	2234	2248	2250	2241	1385
155°	2535	2542	2550	2562	2554	1167
165°	2757	2755	2755	2772	2760	778
175°	2869	2862	2857	2874	2860	273
180°	2874	2874	2874	2874	2874	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1178.8	1178.8	1178.8	1178.8	1178.8
2.5°	1185.7	1180.0	1167.5	1178.8	1176.7
5°	1178.8	1174.4	1161.9	1170.9	1168.7
7.5°	1170.9	1164.2	1151.7	1160.8	1158.5
10°	1158.5	1150.5	1137.0	1146.0	1142.7
12.5°	1141.5	1134.7	1121.2	1126.7	1124.5
15°	1122.2	1115.5	1100.7	1105.2	1099.5
17.5°	1098.3	1091.7	1076.8	1082.5	1076.8
20°	1072.3	1065.5	1049.7	1053.0	1048.5
22.5°	1046.3	1036.1	1021.3	1021.3	1019.0
25°	1015.6	1006.6	987.3	989.6	987.3
27.5°	981.6	973.6	959.0	955.6	950.0
30°	947.7	938.6	921.6	918.2	913.6
32.5°	911.4	904.6	886.5	879.6	875.0
35°	876.3	864.9	846.8	839.9	834.2
37.5°	836.6	826.4	808.2	800.2	794.6
40°	795.8	786.7	768.5	758.4	753.9
42.5°	756.1	747.0	728.9	717.5	710.7
45°	713.1	705.1	688.0	675.6	671.1
47.5°	671.1	663.2	645.0	632.5	625.7
50°	626.8	621.2	605.3	589.5	583.8
52.5°	583.8	575.8	561.2	548.7	540.7
55°	539.7	532.8	519.2	505.6	500.0
57.5°	495.3	489.7	474.9	461.3	456.8
60°	451.1	446.7	430.8	418.3	415.0
62.5°	408.1	400.1	388.8	377.5	372.9
65°	364.0	357.1	345.8	335.6	329.9
67.5°	318.6	312.9	302.7	294.8	290.2
70°	276.6	272.1	261.9	253.9	249.4
72.5°	233.6	228.9	223.3	215.4	212.1
75°	190.4	188.2	182.5	175.7	178.0
77.5°	151.9	147.3	145.0	141.7	138.4
80°	113.4	112.2	109.9	106.5	104.3
82.5°	77.1	77.1	76.0	71.4	71.4
85°	46.5	45.3	44.2	40.8	39.7
87.5°	20.4	18.2	15.9	12.5	11.3
90°	2.6	31.2	84.9	79.7	82.3
92.5°	53.7	72.8	75.4	78.0	78.0
95°	126.5	150.8	155.1	155.1	150.8
97.5°	210.6	233.1	242.7	242.7	242.7
100°	307.6	327.6	334.5	334.5	331.9
102.5°	409.9	424.6	434.1	436.8	434.1
105°	521.7	528.6	533.8	538.2	538.2
107.5°	632.6	643.0	643.0	644.7	632.6
110°	740.0	754.0	754.0	754.0	747.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	856.2	870.9	868.3	861.4	856.2
115°	970.6	984.4	980.1	977.5	970.6
117.5°	1084.1	1103.2	1091.1	1084.1	1077.1
120°	1198.5	1217.5	1198.5	1198.5	1190.6
122.5°	1302.4	1326.8	1314.6	1307.7	1302.4
125°	1411.7	1433.3	1426.4	1418.6	1416.0
127.5°	1518.2	1545.1	1535.6	1525.2	1518.2
130°	1617.9	1649.1	1644.8	1639.5	1630.0
132.5°	1729.7	1753.9	1755.7	1743.5	1736.7
135°	1825.8	1852.7	1858.0	1855.3	1848.5
137.5°	1933.3	1955.0	1959.3	1957.6	1947.2
140°	2027.8	2049.4	2061.5	2061.5	2052.0
142.5°	2124.9	2146.5	2153.4	2156.1	2146.5
145°	2216.8	2234.0	2247.9	2250.5	2241.0
147.5°	2299.1	2320.7	2331.1	2335.4	2325.9
150°	2384.0	2398.7	2408.2	2416.0	2408.2
152.5°	2459.3	2474.1	2486.2	2495.8	2486.2
155°	2534.8	2541.6	2549.5	2561.6	2553.8
157.5°	2599.7	2604.9	2609.3	2626.6	2614.4
160°	2657.8	2663.0	2665.6	2680.3	2669.9
162.5°	2711.5	2711.5	2714.1	2730.6	2718.5
165°	2757.4	2754.8	2754.8	2772.2	2760.1
167.5°	2799.0	2791.3	2791.3	2808.5	2796.4
170°	2830.2	2823.3	2820.8	2838.0	2823.3
172.5°	2851.9	2845.0	2842.4	2859.7	2845.0
175°	2869.2	2862.3	2857.1	2874.5	2859.7
177.5°	2878.7	2871.9	2866.6	2881.3	2866.6
180°	2874.5	2874.5	2874.5	2874.5	2874.5



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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	5.70	6.39	6.83	7.51	9.07	5.27	5.96	6.40	7.08	8.64
	3H	7.34	7.96	8.48	9.09	10.67	6.87	7.49	8.01	8.62	10.20
	4H	7.91	8.50	9.06	9.63	11.21	7.44	8.03	8.59	9.16	10.75
	6H	8.30	8.84	9.45	9.97	11.57	7.83	8.37	8.98	9.50	11.10
	8H	8.40	8.91	9.55	10.06	11.64	7.93	8.44	9.08	9.59	11.18
	12H	8.43	8.92	9.60	10.06	11.67	7.96	8.45	9.12	9.59	11.20
4H	2H	6.14	6.72	7.29	7.85	9.44	5.79	6.38	6.95	7.51	9.10
	3H	7.98	8.47	9.14	9.62	11.22	7.59	8.08	8.75	9.23	10.83
	4H	8.68	9.13	9.84	10.27	11.89	8.28	8.73	9.44	9.87	11.49
	6H	9.18	9.56	10.35	10.73	12.34	8.77	9.16	9.94	10.33	11.93
	8H	9.32	9.68	10.49	10.84	12.46	8.91	9.27	10.08	10.43	12.05
	12H	9.38	9.71	10.56	10.88	12.50	8.96	9.29	10.15	10.46	12.09
8H	4H	8.86	9.22	10.03	10.38	12.00	8.50	8.86	9.67	10.02	11.64
	6H	9.47	9.77	10.66	10.97	12.59	9.11	9.41	10.30	10.61	12.23
	8H	9.69	9.95	10.88	11.13	12.77	9.32	9.58	10.52	10.76	12.40
	12H	9.81	10.03	11.00	11.21	12.88	9.43	9.65	10.62	10.83	12.50
12H	4H	8.84	9.16	10.02	10.33	11.96	8.49	8.81	9.67	9.98	11.61
	6H	9.50	9.76	10.69	10.94	12.58	9.15	9.41	10.34	10.59	12.23
	8H	9.73	9.96	10.92	11.13	12.80	9.37	9.60	10.57	10.78	12.45