

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: P921557

Luminaire Tested: DFN2DIP-HX2F0-040D020US940-RLONL

Issue Date: 11/21/2024

**Test Information**

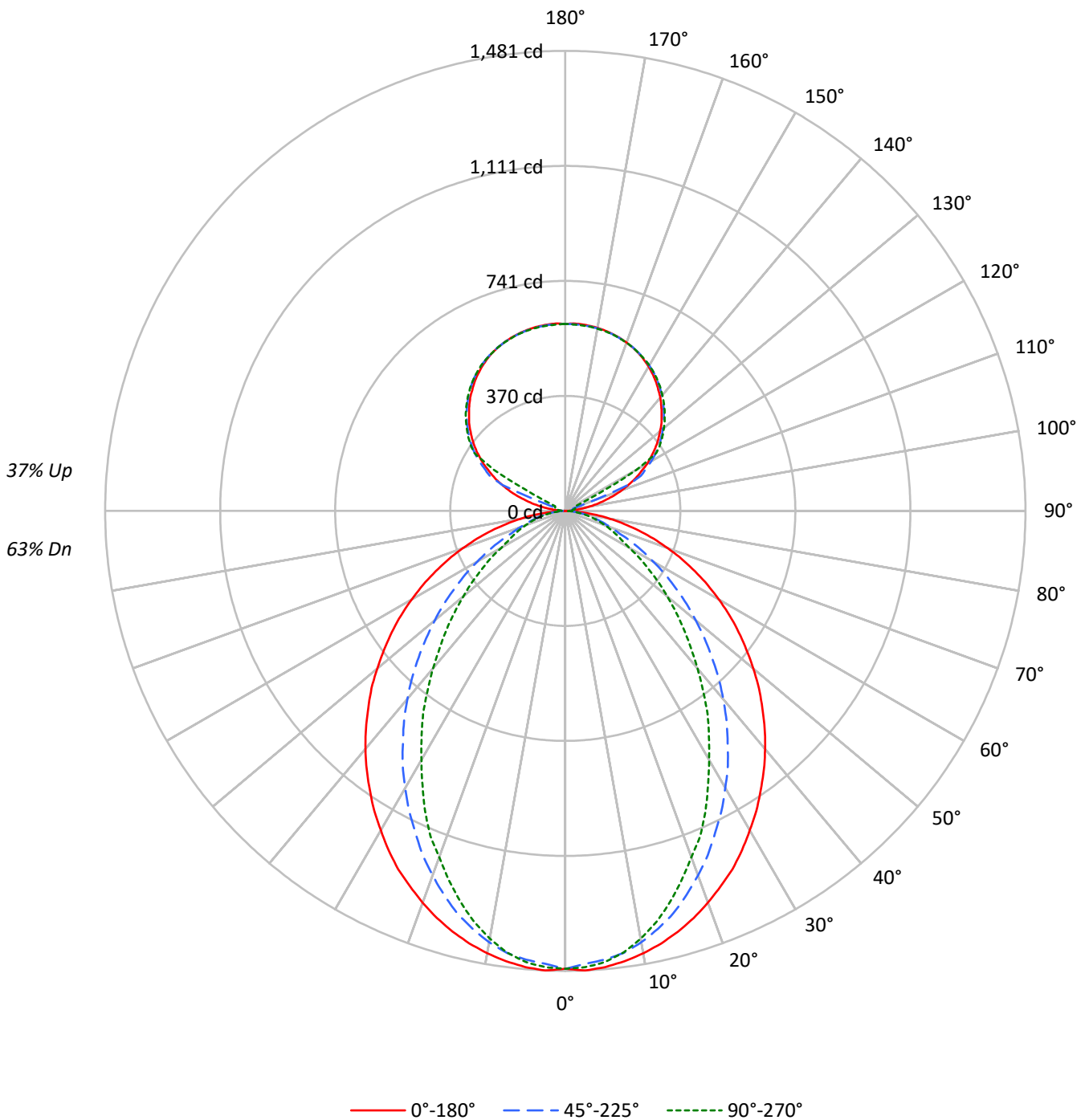
Test Method: LM-79-2019  
Report Number: P921557  
REPORT IS A COMBINATION OF REPORTS P900676 AND P897595  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-040D020US940-RLONL  
Description: 2 foot, 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: 4797.4 lumens  
Efficiency: N/A  
Efficacy: 93.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 1.99' x L: 2.3' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 51.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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	91	91	91	79	79	79	68	68	68	68	68	68	63
1	101	97	93	90	95	91	88	85	80	78	76	71	69	67	61	60	59	59	59	59	54
2	93	86	80	75	87	81	75	71	71	67	64	63	60	57	55	52	51	51	51	51	47
3	85	76	69	63	80	72	65	60	63	58	54	56	52	49	49	46	44	44	44	44	40
4	78	68	60	54	73	64	57	52	57	51	47	50	46	43	44	41	38	38	38	38	35
5	72	61	53	47	67	57	50	45	51	45	41	46	41	37	40	37	34	34	34	34	31
6	67	55	47	41	62	52	45	39	46	41	36	41	37	33	37	33	30	30	30	30	27
7	62	50	42	36	58	47	40	35	42	36	32	38	33	30	34	30	27	27	27	27	25
8	58	45	38	32	54	43	36	31	39	33	29	35	30	27	31	27	24	24	24	24	22
9	54	42	34	29	51	40	33	28	36	30	26	32	27	24	29	25	22	22	22	22	20
10	50	38	31	26	47	37	30	25	33	28	24	30	25	22	27	23	20	20	20	20	18

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

	0°	45°	90°
0°	3473	3473	3473
5°	3473	3410	3434
10°	3434	3335	3316
15°	3381	3217	3137
20°	3313	3057	2920
25°	3243	2880	2711
30°	3151	2698	2448
35°	3061	2505	2216
40°	2969	2305	1953
45°	2863	2085	1714
50°	2752	1863	1481
55°	2636	1627	1258
60°	2502	1381	1030
65°	2347	1133	919
70°	2159	901	823
75°	1922	779	737
80°	1581	630	621
85°	1034	389	434

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2863 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	138.2	2.9
10°-20°	379.3	7.9
20°-30°	532.5	11.1
30°-40°	580.5	12.1
40°-50°	533.5	11.1
50°-60°	419.0	8.7
60°-70°	272.7	5.7
70°-80°	140.4	2.9
80°-90°	36.9	0.8
90°-100°	19.8	0.4
100°-110°	74.0	1.5
110°-120°	196.2	4.1
120°-130°	325.4	6.8
130°-140°	345.7	7.2
140°-150°	321.3	6.7
150°-160°	258.3	5.4
160°-170°	166.4	3.5
170°-180°	57.3	1.2
0°-30°	1049.9	21.9
0°-40°	1630.4	34.0
0°-60°	2582.9	53.8
0°-90°	3032.9	63.2
90°-120°	290.0	6.0
90°-150°	1282.5	26.7
90°-180°	1765.0	36.8
0°-180°	4797.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1474	1474	1474	1474	1474	
5°	1474	1468	1450	1462	1458	140
15°	1402	1387	1342	1317	1304	395
25°	1273	1230	1142	1087	1067	585
35°	1097	1029	911	827	798	686
45°	896	807	667	572	540	692
55°	682	578	434	354	328	609
65°	460	352	232	187	183	456
75°	245	152	107	97	96	260
85°	57	29	25	25	25	66
90°	0	5	9	11	12	5
95°	28	14	17	19	19	33
105°	132	145	27	31	33	141
115°	250	258	269	67	36	247
125°	354	360	368	371	372	316
135°	438	445	449	453	452	338
145°	508	508	515	518	516	318
155°	560	556	561	564	560	258
165°	590	587	588	592	588	167
175°	603	600	601	604	600	57
180°	602	602	602	602	602	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1474.2	1474.2	1474.2	1474.2	1474.2
2.5°	1480.9	1474.2	1459.5	1472.9	1470.2
5°	1474.2	1467.5	1450.1	1462.1	1458.2
7.5°	1462.1	1454.2	1435.6	1440.7	1434.1
10°	1446.2	1436.8	1410.2	1406.0	1398.2
12.5°	1426.2	1414.2	1378.0	1370.1	1355.4
15°	1402.1	1387.4	1342.1	1316.8	1303.5
17.5°	1374.1	1352.7	1296.6	1267.4	1246.0
20°	1342.1	1315.4	1248.7	1215.4	1186.0
22.5°	1307.4	1276.8	1199.3	1154.0	1134.1
25°	1272.7	1230.0	1141.9	1087.4	1067.2
27.5°	1231.5	1186.0	1088.6	1025.9	995.1
30°	1187.4	1136.6	1029.8	961.9	925.9
32.5°	1144.7	1083.2	973.9	893.9	860.4
35°	1096.7	1028.6	911.2	827.2	797.7
37.5°	1050.0	976.5	852.5	760.4	727.1
40°	1000.6	920.6	791.1	696.4	661.7
42.5°	949.8	864.5	729.8	631.0	597.7
45°	896.5	807.1	667.1	572.3	540.3
47.5°	845.9	751.2	607.1	512.3	483.0
50°	789.8	695.1	548.3	456.2	428.3
52.5°	735.0	635.0	492.3	404.2	378.9
55°	681.7	577.6	433.5	353.6	328.2
57.5°	627.1	520.3	381.6	306.8	285.5
60°	571.0	464.2	326.8	258.9	237.6
62.5°	516.4	409.7	280.1	216.2	205.5
65°	460.3	352.1	232.1	186.8	182.7
67.5°	407.0	298.8	186.8	164.1	160.1
70°	350.9	246.8	154.7	141.4	136.0
72.5°	297.6	198.8	129.4	118.8	116.1
75°	245.4	152.0	106.7	97.4	96.1
77.5°	193.5	108.0	84.1	78.7	76.0
80°	145.3	77.4	63.9	58.8	58.8
82.5°	101.4	52.1	44.1	41.3	41.3
85°	57.3	29.3	25.3	25.3	25.3
87.5°	21.4	10.6	10.6	9.4	9.4
90°	0.4	5.3	8.6	10.9	11.8
92.5°	10.9	9.2	10.4	11.3	11.8
95°	28.3	13.9	16.9	19.2	18.7
97.5°	50.9	15.2	22.2	23.5	24.0
100°	77.1	17.4	24.8	28.3	29.2
102.5°	105.8	105.0	25.7	30.5	31.8
105°	132.4	145.4	26.6	31.3	33.1
107.5°	163.4	174.2	27.5	32.2	34.0
110°	193.0	202.1	76.2	32.7	34.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	220.8	228.6	221.2	33.5	34.9
115°	250.4	257.8	268.8	67.1	35.8
117.5°	276.1	284.8	292.2	230.0	115.8
120°	304.9	311.4	319.2	324.5	265.6
122.5°	329.2	336.2	344.9	347.5	348.0
125°	354.1	359.7	368.0	371.0	372.4
127.5°	376.7	382.8	389.4	393.7	394.1
130°	398.1	405.0	409.8	414.6	414.2
132.5°	419.8	425.5	430.3	434.2	433.8
135°	438.2	445.1	449.0	453.4	452.5
137.5°	457.3	462.5	466.9	471.3	469.9
140°	476.0	479.6	484.3	488.2	486.1
142.5°	491.7	494.8	500.4	503.9	501.7
145°	508.3	507.8	515.2	518.3	516.1
147.5°	522.6	521.3	528.7	530.8	529.1
150°	536.5	533.5	540.5	543.1	540.9
152.5°	548.3	544.8	551.3	554.0	550.9
155°	559.6	555.7	561.0	563.6	560.1
157.5°	568.8	565.3	569.3	572.3	568.8
160°	576.7	574.0	576.7	579.3	576.2
162.5°	583.5	580.9	583.2	586.2	582.3
165°	589.7	587.1	588.4	591.5	588.4
167.5°	594.5	591.8	593.2	596.3	592.3
170°	598.4	595.8	596.6	599.7	595.8
172.5°	601.0	598.4	599.3	602.4	598.4
175°	603.2	600.1	601.0	604.0	599.7
177.5°	604.0	601.0	601.5	604.5	600.6
180°	601.9	601.9	601.9	601.9	601.9



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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	12.49	13.44	13.33	14.30	15.37	8.47	9.42	9.31	10.28	11.35
	3H	14.15	15.00	15.01	15.87	16.97	9.65	10.50	10.51	11.37	12.47
	4H	14.75	15.55	15.62	16.42	17.53	10.10	10.90	10.97	11.77	12.88
	6H	15.15	15.89	16.04	16.78	17.90	10.41	11.15	11.29	12.03	13.15
	8H	15.27	15.98	16.16	16.88	18.00	10.49	11.20	11.39	12.10	13.22
	12H	15.33	16.00	16.23	16.89	18.04	10.53	11.20	11.43	12.10	13.24
4H	2H	12.52	13.32	13.39	14.20	15.31	9.07	9.87	9.94	10.74	11.85
	3H	14.33	15.00	15.22	15.90	17.03	10.41	11.07	11.29	11.98	13.11
	4H	15.01	15.61	15.90	16.52	17.67	10.95	11.55	11.84	12.46	13.61
	6H	15.50	16.03	16.42	16.95	18.11	11.35	11.88	12.27	12.80	13.96
	8H	15.67	16.16	16.58	17.08	18.24	11.48	11.96	12.39	12.89	14.05
	12H	15.75	16.19	16.69	17.13	18.31	11.54	11.98	12.47	12.92	14.09
8H	4H	14.98	15.47	15.89	16.39	17.55	11.22	11.71	12.14	12.63	13.80
	6H	15.52	15.93	16.46	16.89	18.05	11.72	12.12	12.66	13.09	14.25
	8H	15.72	16.08	16.67	17.03	18.22	11.90	12.25	12.85	13.21	14.39
	12H	15.85	16.16	16.80	17.11	18.34	12.01	12.32	12.96	13.27	14.50
12H	4H	14.94	15.37	15.87	16.31	17.49	11.23	11.67	12.16	12.61	13.78
	6H	15.50	15.85	16.45	16.81	17.99	11.76	12.12	12.71	13.08	14.26
	8H	15.70	16.02	16.66	16.97	18.20	11.96	12.28	12.92	13.22	14.46