

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: P902424

Luminaire Tested: DFN2DIP-HX2F0-020D030US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P902424  
REPORT IS A COMBINATION OF REPORTS P899162 AND P896039  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX2F0-020D030US830-RLLFLL  
Description: 2 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

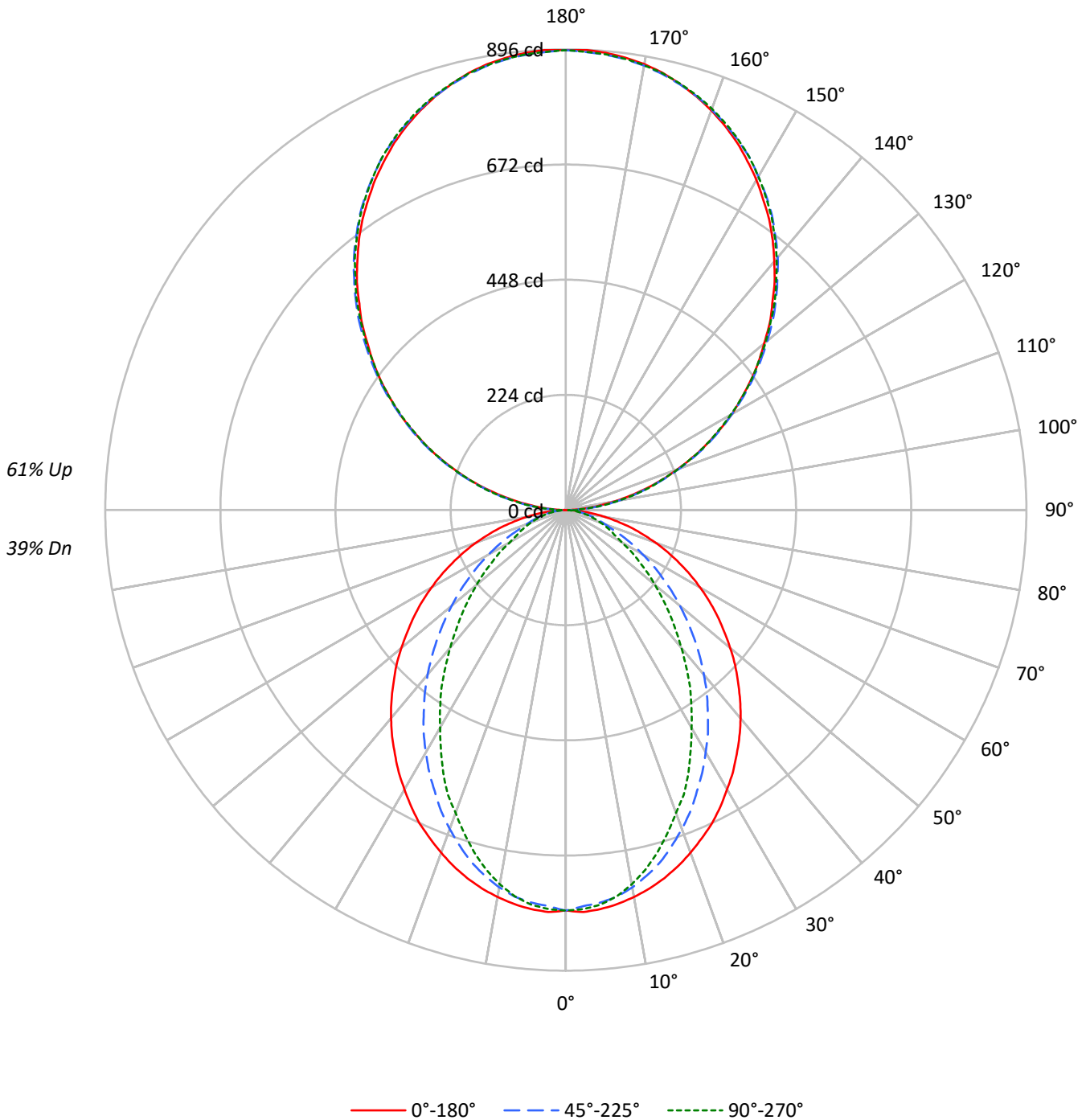
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4104.8 lumens  
Efficiency: N/A  
Efficacy: 110.9 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-Indirect

Input Watts (W): 37  
Input Voltage (V):  
Input Current (A<sub>in</sub>): 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				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	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46	39			
1	96	92	88	85	87	83	80	78	68	66	64	54	53	51	41	40	40	34			
2	87	80	75	70	79	73	68	64	60	57	54	48	46	44	37	35	34	29			
3	80	71	64	58	73	65	59	54	53	49	46	43	40	37	33	31	29	25			
4	73	63	55	50	66	58	51	46	48	43	39	38	35	32	30	27	26	22			
5	67	56	48	43	61	52	45	40	43	38	34	35	31	28	27	24	22	19			
6	62	51	43	37	56	46	40	35	39	33	30	31	28	25	25	22	20	17			
7	57	46	38	33	52	42	35	30	35	30	26	29	25	22	22	20	18	15			
8	53	41	34	29	49	38	32	27	32	27	23	26	22	20	21	18	16	14			
9	50	38	31	26	45	35	29	24	29	24	21	24	20	18	19	17	15	12			
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13	11			

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

	0°	45°	90°
0°	1836	1836	1836
5°	1836	1802	1815
10°	1815	1763	1753
15°	1787	1700	1658
20°	1751	1616	1543
25°	1714	1522	1433
30°	1665	1426	1294
35°	1618	1324	1171
40°	1569	1218	1032
45°	1513	1102	906
50°	1455	984	783
55°	1393	860	665
60°	1322	730	544
65°	1241	599	486
70°	1141	476	435
75°	1016	412	389
80°	836	333	327
85°	547	206	230

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1513 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	73.0	1.8
10°-20°	200.4	4.9
20°-30°	281.4	6.9
30°-40°	306.8	7.5
40°-50°	282.0	6.9
50°-60°	221.4	5.4
60°-70°	144.1	3.5
70°-80°	74.2	1.8
80°-90°	21.5	0.5
90°-100°	55.3	1.3
100°-110°	175.8	4.3
110°-120°	300.9	7.3
120°-130°	395.7	9.6
130°-140°	444.2	10.8
140°-150°	435.6	10.6
150°-160°	365.4	8.9
160°-170°	242.3	5.9
170°-180°	84.7	2.1
0°-30°	554.9	13.5
0°-40°	861.7	21.0
0°-60°	1365.1	33.3
0°-90°	1604.9	39.1
90°-120°	532.1	13.0
90°-150°	1807.5	44.0
90°-180°	2500.0	60.9
0°-180°	4104.8	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	779	779	779	779	779	
5°	779	776	766	773	771	74
15°	741	733	709	696	689	209
25°	673	650	604	575	564	309
35°	580	544	482	437	422	363
45°	474	426	353	302	286	366
55°	360	305	229	187	173	322
65°	243	186	123	99	97	241
75°	130	80	56	52	51	137
85°	30	16	13	13	13	35
90°	1	10	26	25	26	4
95°	39	47	48	48	47	44
105°	162	164	166	167	167	171
115°	302	306	305	304	302	299
125°	439	446	444	441	440	392
135°	568	576	578	577	575	439
145°	690	695	699	700	697	431
155°	789	791	793	797	795	363
165°	858	857	857	862	859	242
175°	893	890	889	894	890	85
180°	894	894	894	894	894	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	779.1	779.1	779.1	779.1	779.1
2.5°	782.6	779.1	771.3	778.4	777.0
5°	779.1	775.6	766.4	772.8	770.6
7.5°	772.8	768.5	758.7	761.5	757.9
10°	764.3	759.3	745.3	743.1	739.0
12.5°	753.8	747.3	728.3	724.2	716.3
15°	741.0	733.2	709.3	695.9	688.9
17.5°	726.2	714.9	685.3	669.8	658.6
20°	709.3	695.1	660.0	642.3	626.8
22.5°	691.0	674.8	633.9	609.9	599.4
25°	672.7	650.1	603.5	574.7	564.0
27.5°	650.8	626.8	575.3	542.2	525.9
30°	627.5	600.7	544.3	508.4	489.3
32.5°	604.9	572.5	514.7	472.4	454.8
35°	579.6	543.7	481.6	437.2	421.6
37.5°	554.9	516.0	450.5	401.9	384.3
40°	528.8	486.5	418.1	368.1	349.7
42.5°	502.0	456.9	385.7	333.5	315.9
45°	473.8	426.5	352.6	302.5	285.5
47.5°	447.0	397.0	320.8	270.7	255.2
50°	417.5	367.4	289.8	241.1	226.4
52.5°	388.4	335.5	260.1	213.7	200.3
55°	360.2	305.3	229.1	186.9	173.4
57.5°	331.4	274.9	201.7	162.2	150.9
60°	301.8	245.3	172.8	136.9	125.5
62.5°	272.9	216.5	148.1	114.2	108.6
65°	243.3	186.2	122.7	98.8	96.6
67.5°	215.1	157.9	98.8	86.7	84.6
70°	185.4	130.4	81.7	74.7	71.9
72.5°	157.2	105.0	68.3	62.8	61.4
75°	129.7	80.3	56.4	51.5	50.8
77.5°	102.3	57.1	44.4	41.6	40.2
80°	76.8	40.9	33.8	31.0	31.0
82.5°	53.5	27.5	23.3	21.9	21.9
85°	30.3	15.5	13.4	13.4	13.4
87.5°	11.3	5.7	5.7	4.9	4.9
90°	0.8	9.7	26.4	24.8	25.6
92.5°	16.7	22.6	23.5	24.2	24.2
95°	39.4	46.9	48.3	48.3	46.9
97.5°	65.5	72.5	75.5	75.5	75.5
100°	95.7	101.9	104.1	104.1	103.3
102.5°	127.5	132.1	135.1	135.9	135.1
105°	162.3	164.5	166.1	167.4	167.4
107.5°	196.8	200.0	200.0	200.6	196.8
110°	230.3	234.6	234.6	234.6	232.4



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	266.4	271.0	270.1	268.0	266.4
115°	302.0	306.2	304.9	304.2	302.0
117.5°	337.2	343.2	339.4	337.2	335.1
120°	372.9	378.8	372.9	372.9	370.4
122.5°	405.2	412.7	409.0	406.8	405.2
125°	439.2	445.9	443.7	441.3	440.5
127.5°	472.3	480.7	477.8	474.5	472.3
130°	503.3	513.0	511.7	510.1	507.1
132.5°	538.1	545.6	546.2	542.4	540.3
135°	568.1	576.4	578.1	577.2	575.0
137.5°	601.4	608.2	609.5	609.1	605.8
140°	630.8	637.6	641.4	641.4	638.4
142.5°	661.1	667.8	670.0	670.8	667.8
145°	689.7	695.0	699.4	700.1	697.2
147.5°	715.3	722.0	725.2	726.6	723.6
150°	741.7	746.3	749.2	751.7	749.2
152.5°	765.2	769.7	773.5	776.5	773.5
155°	788.6	790.7	793.1	796.9	794.6
157.5°	808.8	810.4	811.8	817.2	813.4
160°	826.9	828.5	829.3	833.9	830.7
162.5°	843.6	843.6	844.4	849.5	845.7
165°	857.9	857.1	857.1	862.4	858.7
167.5°	870.8	868.4	868.4	873.7	870.0
170°	880.5	878.4	877.6	883.0	878.4
172.5°	887.2	885.1	884.3	889.7	885.1
175°	892.7	890.5	888.9	894.3	889.7
177.5°	895.6	893.4	891.8	896.5	891.8
180°	894.3	894.3	894.3	894.3	894.3



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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	8.01	8.75	9.06	9.81	11.23	3.99	4.74	5.04	5.79	7.21
	3H	9.65	10.32	10.71	11.38	12.82	5.16	5.83	6.22	6.89	8.33
	4H	10.24	10.87	11.31	11.94	13.38	5.59	6.23	6.66	7.29	8.73
	6H	10.64	11.22	11.72	12.29	13.75	5.89	6.48	6.97	7.54	9.00
	8H	10.75	11.30	11.84	12.39	13.84	5.97	6.53	7.06	7.61	9.06
	12H	10.80	11.33	11.89	12.40	13.88	6.01	6.53	7.10	7.61	9.09
4H	2H	8.01	8.64	9.09	9.71	11.15	4.56	5.20	5.64	6.26	7.71
	3H	9.80	10.33	10.89	11.42	12.88	5.88	6.41	6.97	7.50	8.96
	4H	10.47	10.96	11.56	12.04	13.52	6.42	6.90	7.51	7.98	9.46
	6H	10.96	11.37	12.06	12.48	13.95	6.81	7.23	7.91	8.33	9.80
	8H	11.12	11.51	12.22	12.60	14.09	6.93	7.32	8.03	8.41	9.90
	12H	11.20	11.55	12.31	12.65	14.15	6.98	7.33	8.10	8.44	9.93
8H	4H	10.43	10.82	11.53	11.91	13.40	6.67	7.06	7.77	8.16	9.65
	6H	10.97	11.29	12.09	12.42	13.91	7.17	7.48	8.29	8.62	10.11
	8H	11.17	11.45	12.29	12.56	14.07	7.34	7.62	8.47	8.74	10.25
	12H	11.28	11.53	12.41	12.64	14.19	7.45	7.69	8.58	8.81	10.35
12H	4H	10.38	10.73	11.49	11.84	13.33	6.67	7.02	7.79	8.13	9.62
	6H	10.94	11.22	12.07	12.34	13.85	7.21	7.49	8.34	8.61	10.11
	8H	11.14	11.38	12.27	12.50	14.04	7.40	7.65	8.53	8.76	10.31