

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: P916453

Luminaire Tested: DFN2DIP-HX4F0-110D040US930-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916453
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-HX4F0-110D040US930-RLLFLL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

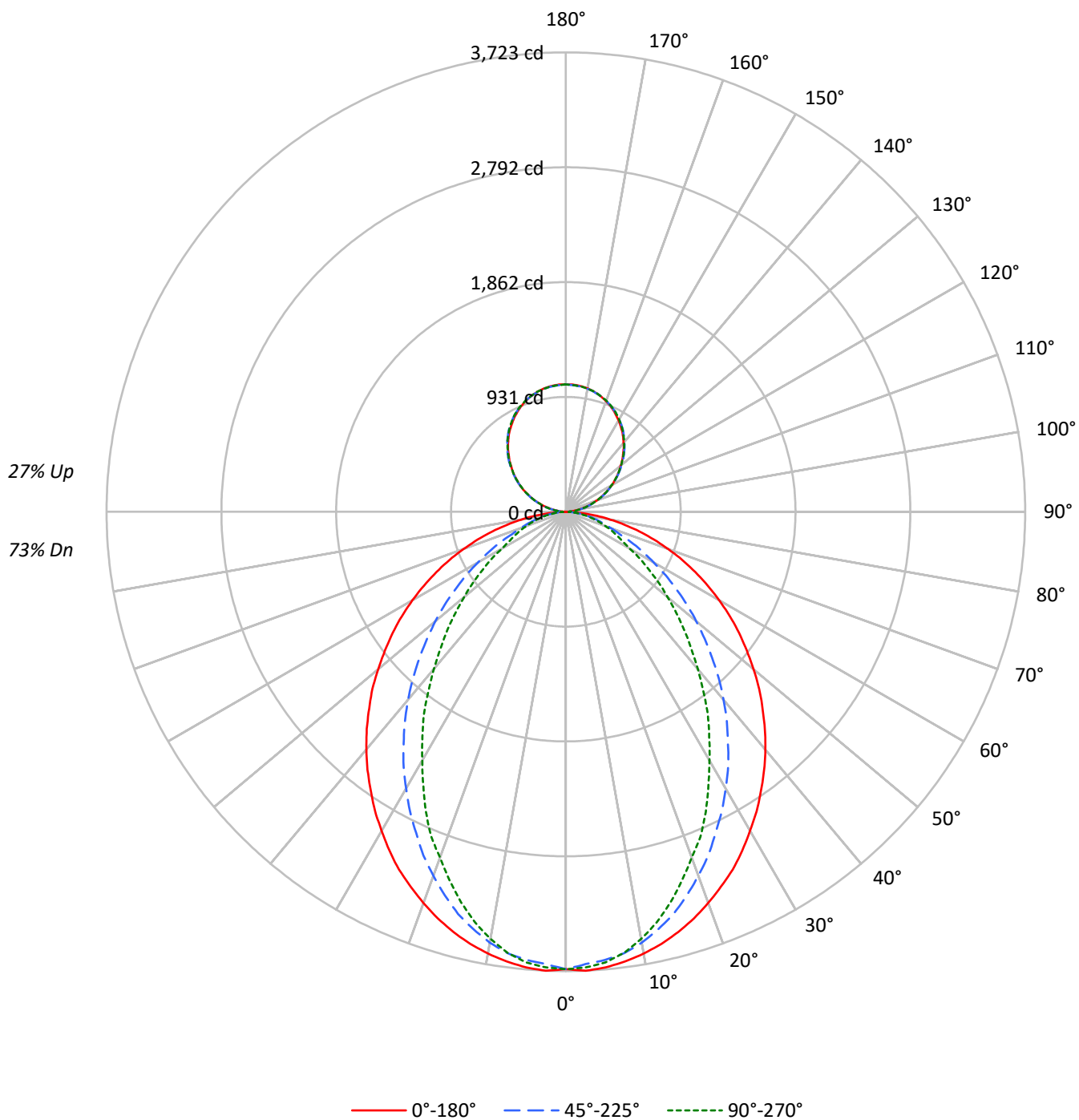
Lumens per Lamp: N/A
Luminaire Lumens: 10509.2 lumens
Efficiency: N/A
Efficacy: 77.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Direct

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
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	113	113	113	113	107	107	107	107	96	96	96	86	86	86	77	77	77
1	104	99	96	92	98	94	91	88	85	83	80	77	75	73	69	68	66
2	95	88	82	77	90	83	78	74	76	71	68	68	65	62	62	59	57
3	87	78	70	65	82	74	68	62	67	62	58	61	57	53	55	52	49
4	80	69	61	55	76	66	59	54	60	55	50	55	50	47	50	46	43
5	74	62	54	48	70	60	52	47	54	48	44	50	45	41	45	41	38
6	68	56	48	42	65	54	47	41	49	43	39	45	40	36	41	37	34
7	64	51	43	38	60	49	42	37	45	39	34	41	36	32	38	34	30
8	59	47	39	34	56	45	38	33	41	35	31	38	33	29	35	31	28
9	55	43	35	30	53	41	34	30	38	32	28	35	30	27	33	28	25
10	52	40	32	28	49	38	31	27	35	30	26	33	28	24	30	26	23

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2756	2756	2756
5°	2761	2713	2730
10°	2734	2660	2641
15°	2696	2572	2504
20°	2647	2451	2336
25°	2596	2315	2173
30°	2528	2177	1967
35°	2461	2027	1785
40°	2393	1872	1578
45°	2314	1700	1389
50°	2232	1527	1205
55°	2147	1342	1028
60°	2048	1148	847
65°	1935	951	762
70°	1797	767	690
75°	1625	677	628
80°	1374	569	545
85°	961	381	411

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2314 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	347.4	3.3
10°-20°	953.6	9.1
20°-30°	1338.9	12.7
30°-40°	1459.5	13.9
40°-50°	1341.4	12.8
50°-60°	1053.5	10.0
60°-70°	685.7	6.5
70°-80°	353.0	3.4
80°-90°	93.1	0.9
90°-100°	63.8	0.6
100°-110°	202.8	1.9
110°-120°	347.0	3.3
120°-130°	456.4	4.3
130°-140°	512.3	4.9
140°-150°	502.4	4.8
150°-160°	421.4	4.0
160°-170°	279.5	2.7
170°-180°	97.7	0.9
0°-30°	2639.9	25.1
0°-40°	4099.4	39.0
0°-60°	6494.2	61.8
0°-90°	7626.0	72.6
90°-120°	613.6	5.8
90°-150°	2084.7	19.8
90°-180°	2883.0	27.4
0°-180°	10509.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3707	3707	3707	3707	3707	
5°	3707	3690	3646	3676	3666	351
15°	3525	3488	3374	3311	3277	993
25°	3200	3093	2871	2734	2683	1472
35°	2757	2586	2291	2080	2006	1726
45°	2254	2029	1677	1439	1358	1741
55°	1714	1452	1090	889	825	1532
65°	1157	885	584	470	459	1147
75°	617	382	268	245	242	653
85°	144	74	64	64	64	165
90°	1	11	30	29	30	10
95°	45	54	56	56	54	51
105°	187	190	192	193	193	198
115°	348	353	352	351	348	344
125°	506	514	512	509	508	453
135°	655	665	667	666	663	506
145°	795	802	807	808	804	497
155°	910	912	915	919	916	419
165°	989	988	988	995	990	279
175°	1030	1027	1025	1031	1026	98
180°	1031	1031	1031	1031	1031	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3706.6	3706.6	3706.6	3706.6	3706.6
2.5°	3723.3	3706.6	3669.6	3703.4	3696.6
5°	3706.6	3689.9	3646.1	3676.3	3666.4
7.5°	3676.3	3656.4	3609.4	3622.6	3605.8
10°	3636.1	3612.6	3545.7	3535.4	3515.5
12.5°	3585.9	3555.7	3464.9	3445.0	3407.9
15°	3525.4	3488.4	3374.5	3310.8	3277.3
17.5°	3455.0	3401.3	3260.3	3186.6	3132.9
20°	3374.5	3307.3	3139.6	3056.0	2982.0
22.5°	3287.4	3210.1	3015.5	2901.6	2851.3
25°	3200.1	3092.7	2871.3	2733.9	2683.4
27.5°	3096.3	2982.0	2737.1	2579.4	2502.2
30°	2985.5	2857.8	2589.5	2418.6	2327.8
32.5°	2878.1	2723.6	2448.8	2247.5	2163.5
35°	2757.4	2586.2	2291.2	2079.8	2005.8
37.5°	2640.0	2455.3	2143.5	1911.8	1828.2
40°	2515.8	2314.7	1989.1	1750.9	1663.8
42.5°	2388.3	2173.7	1835.0	1586.6	1502.9
45°	2254.2	2029.3	1677.3	1438.8	1358.4
47.5°	2126.8	1888.7	1526.4	1287.9	1214.3
50°	1985.8	1747.8	1378.8	1147.0	1076.9
52.5°	1848.1	1596.5	1237.8	1016.4	952.7
55°	1713.9	1452.4	1090.1	889.0	825.3
57.5°	1576.6	1308.2	959.4	771.6	717.8
60°	1435.7	1167.3	821.7	650.9	597.2
62.5°	1298.3	1030.0	704.3	543.5	516.7
65°	1157.3	885.4	583.7	469.8	459.4
67.5°	1023.2	751.3	469.8	412.5	402.5
70°	882.2	620.7	389.0	355.6	342.0
72.5°	748.0	499.7	325.3	298.6	291.8
75°	617.1	382.2	268.3	244.8	241.7
77.5°	486.5	271.6	211.4	197.9	191.1
80°	365.5	194.7	160.9	147.7	147.7
82.5°	254.8	130.9	110.7	104.0	104.0
85°	144.1	73.7	63.7	63.7	63.7
87.5°	53.7	26.7	26.7	23.5	23.5
90°	0.9	11.2	30.5	28.6	29.5
92.5°	19.2	26.1	27.1	28.0	28.0
95°	45.4	54.1	55.7	55.7	54.1
97.5°	75.6	83.6	87.1	87.1	87.1
100°	110.4	117.6	120.0	120.0	119.1
102.5°	147.1	152.4	155.8	156.7	155.8
105°	187.2	189.6	191.5	193.1	193.1
107.5°	227.0	230.7	230.7	231.3	227.0
110°	265.5	270.5	270.5	270.5	268.1



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	307.2	312.5	311.5	309.1	307.2
115°	348.2	353.3	351.6	350.7	348.2
117.5°	389.0	395.8	391.5	389.0	386.5
120°	430.1	436.8	430.1	430.1	427.2
122.5°	467.3	476.1	471.7	469.2	467.3
125°	506.5	514.3	511.8	509.0	508.1
127.5°	544.8	554.4	551.0	547.2	544.8
130°	580.5	591.7	590.2	588.3	584.9
132.5°	620.6	629.3	630.0	625.6	623.1
135°	655.2	664.8	666.7	665.7	663.2
137.5°	693.7	701.5	703.0	702.4	698.7
140°	727.6	735.4	739.7	739.7	736.3
142.5°	762.5	770.2	772.7	773.6	770.2
145°	795.4	801.6	806.6	807.6	804.1
147.5°	824.9	832.7	836.4	838.0	834.5
150°	855.4	860.7	864.1	866.9	864.1
152.5°	882.5	887.7	892.1	895.5	892.1
155°	909.5	912.0	914.8	919.2	916.3
157.5°	932.9	934.7	936.2	942.5	938.1
160°	953.7	955.5	956.4	961.7	958.0
162.5°	972.9	972.9	973.9	979.7	975.4
165°	989.4	988.5	988.5	994.7	990.3
167.5°	1004.4	1001.5	1001.5	1007.8	1003.4
170°	1015.5	1013.0	1012.1	1018.3	1013.0
172.5°	1023.3	1020.8	1019.9	1026.1	1020.8
175°	1029.6	1027.0	1025.2	1031.4	1026.1
177.5°	1033.0	1030.5	1028.6	1033.9	1028.6
180°	1031.4	1031.4	1031.4	1031.4	1031.4

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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	12.56	13.62	13.30	14.38	15.29	8.53	9.59	9.28	10.35	11.26
	3H	14.26	15.20	15.01	15.97	16.91	9.74	10.69	10.50	11.46	12.40
	4H	14.88	15.77	15.65	16.54	17.50	10.20	11.09	10.98	11.87	12.83
	6H	15.31	16.13	16.10	16.92	17.88	10.54	11.36	11.32	12.14	13.11
	8H	15.44	16.22	16.24	17.03	18.00	10.64	11.42	11.43	12.22	13.19
	12H	15.51	16.26	16.31	17.05	18.05	10.69	11.43	11.49	12.23	13.22
4H	2H	12.61	13.50	13.38	14.27	15.23	9.16	10.05	9.94	10.83	11.78
	3H	14.46	15.20	15.25	16.01	16.98	10.53	11.27	11.32	12.08	13.05
	4H	15.16	15.83	15.96	16.64	17.64	11.09	11.76	11.89	12.57	13.57
	6H	15.69	16.27	16.51	17.10	18.11	11.52	12.10	12.34	12.94	13.94
	8H	15.87	16.41	16.69	17.24	18.26	11.66	12.20	12.48	13.03	14.05
	12H	15.97	16.46	16.82	17.31	18.33	11.73	12.22	12.58	13.07	14.09
8H	4H	15.14	15.68	15.97	16.52	17.53	11.38	11.93	12.21	12.76	13.78
	6H	15.72	16.17	16.57	17.04	18.06	11.91	12.36	12.77	13.24	14.25
	8H	15.94	16.33	16.80	17.21	18.24	12.11	12.50	12.97	13.38	14.41
	12H	16.09	16.44	16.95	17.30	18.39	12.24	12.59	13.10	13.45	14.54
12H	4H	15.11	15.59	15.95	16.45	17.47	11.40	11.89	12.25	12.74	13.76
	6H	15.69	16.09	16.56	16.96	18.00	11.96	12.36	12.83	13.23	14.27
	8H	15.93	16.28	16.79	17.14	18.23	12.19	12.54	13.05	13.40	14.49