

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: P927734

Luminaire Tested: DFN2DIP-HX4F0-090D120US840-RLLONL

Issue Date: 12/12/2024

Test Information

Test Method: LM-79-2019
Report Number: P927734
REPORT IS A COMBINATION OF REPORTS P900974 AND P896187
Test Lab: INNOVATION CENTER
Issue Date: 12/12/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-HX4F0-090D120US840-RLLONL
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

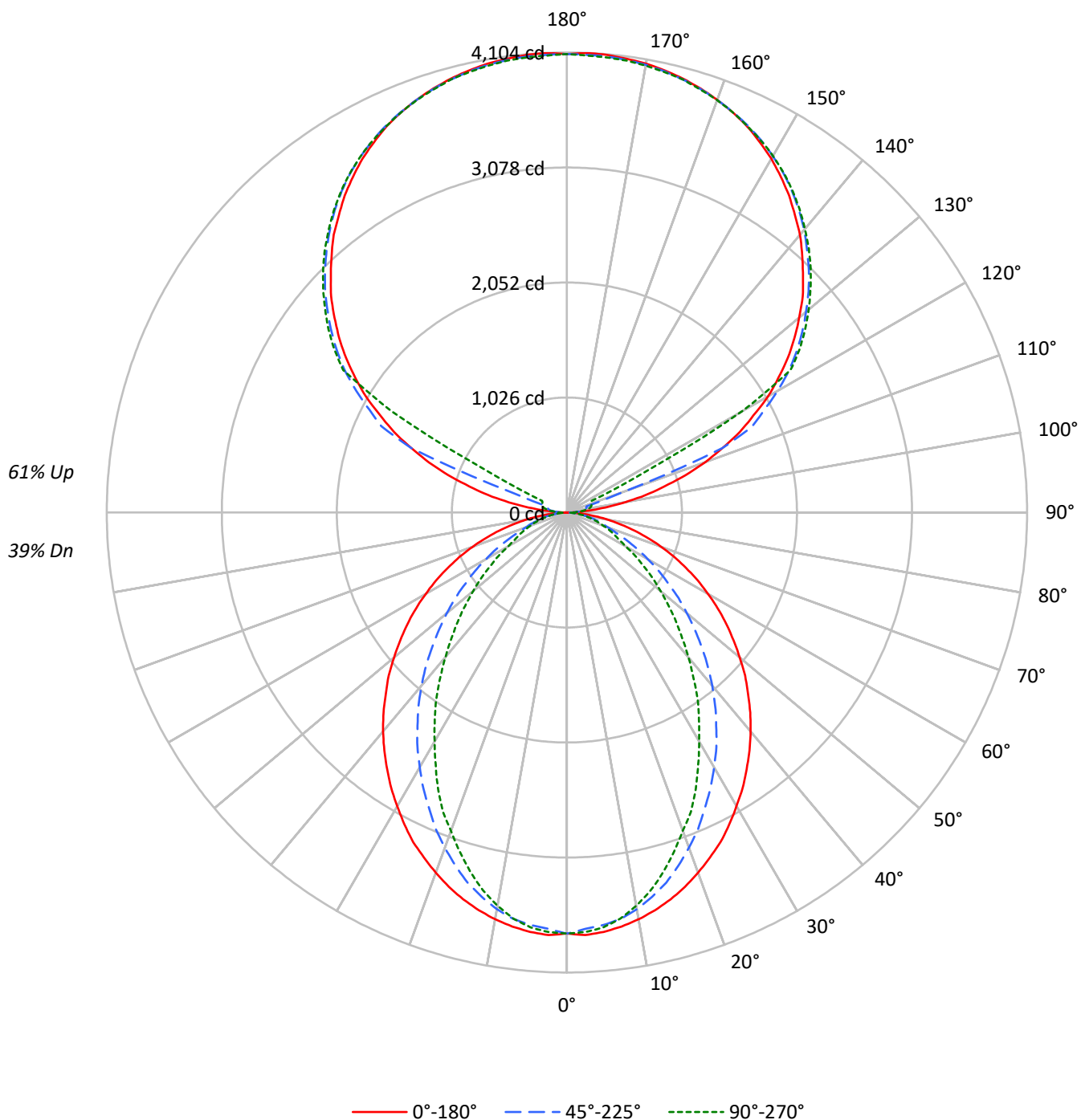
Lumens per Lamp: N/A
Luminaire Lumens: 19721.4 lumens
Efficiency: N/A
Efficacy: 106.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 184.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9821
Total Harmonic Distortion (THDi): 0.08
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	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46
1	96	92	88	85	87	83	80	78	68	66	64	54	53	52	41	41	40
2	87	80	75	70	79	73	68	64	60	57	54	48	46	44	37	35	34
3	80	71	64	58	73	65	59	54	53	49	46	43	40	37	33	31	29
4	73	63	55	50	67	58	51	46	48	43	39	38	35	32	30	27	26
5	67	56	48	43	61	52	45	40	43	38	34	35	31	28	27	25	23
6	62	51	43	37	56	46	40	35	39	34	30	31	28	25	25	22	20
7	57	46	38	33	52	42	35	31	35	30	26	29	25	22	23	20	18
8	53	42	34	29	49	38	32	27	32	27	23	26	22	20	21	18	16
9	50	38	31	26	45	35	29	24	29	24	21	24	20	18	19	17	15
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2793	2793	2793
5°	2798	2749	2766
10°	2770	2695	2676
15°	2732	2606	2537
20°	2682	2484	2367
25°	2631	2346	2202
30°	2562	2206	1993
35°	2494	2054	1809
40°	2425	1897	1599
45°	2345	1723	1408
50°	2262	1548	1221
55°	2176	1360	1042
60°	2076	1163	858
65°	1961	964	772
70°	1821	777	699
75°	1646	686	636
80°	1393	576	553
85°	973	386	416

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2345 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	352.0	1.8
10°-20°	966.4	4.9
20°-30°	1356.8	6.9
30°-40°	1479.0	7.5
40°-50°	1359.4	6.9
50°-60°	1067.6	5.4
60°-70°	694.9	3.5
70°-80°	357.7	1.8
80°-90°	98.5	0.5
90°-100°	134.8	0.7
100°-110°	502.7	2.5
110°-120°	1333.2	6.8
120°-130°	2211.3	11.2
130°-140°	2348.9	11.9
140°-150°	2183.0	11.1
150°-160°	1755.1	8.9
160°-170°	1130.9	5.7
170°-180°	389.2	2.0
0°-30°	2675.2	13.6
0°-40°	4154.2	21.1
0°-60°	6581.1	33.4
0°-90°	7732.2	39.2
90°-120°	1970.8	10.0
90°-150°	8714.0	44.2
90°-180°	11989.0	60.8
0°-180°	19721.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3756	3756	3756	3756	3756	
5°	3756	3739	3695	3726	3715	356
15°	3573	3535	3420	3355	3321	1007
25°	3243	3134	2910	2770	2719	1491
35°	2794	2621	2322	2108	2033	1749
45°	2284	2056	1700	1458	1377	1764
55°	1737	1472	1105	901	836	1552
65°	1173	897	591	476	466	1163
75°	625	387	272	248	245	661
85°	146	75	64	64	64	168
90°	3	35	59	74	80	18
95°	192	94	115	130	127	228
105°	900	988	181	213	225	961
115°	1701	1752	1826	456	243	1675
125°	2406	2444	2501	2521	2530	2146
135°	2977	3024	3051	3081	3075	2300
145°	3454	3450	3501	3521	3506	2160
155°	3802	3776	3812	3829	3806	1752
165°	4007	3989	3998	4019	3998	1132
175°	4098	4078	4084	4104	4075	390
180°	4090	4090	4090	4090	4090	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3756.2	3756.2	3756.2	3756.2	3756.2
2.5°	3773.1	3756.2	3718.6	3752.9	3746.1
5°	3756.2	3739.2	3694.9	3725.5	3715.4
7.5°	3725.5	3705.3	3657.7	3671.0	3654.1
10°	3684.8	3660.9	3593.2	3582.7	3562.5
12.5°	3633.9	3603.3	3511.3	3491.1	3453.5
15°	3572.6	3535.1	3419.7	3355.1	3321.2
17.5°	3501.2	3446.8	3303.9	3229.2	3174.8
20°	3419.7	3351.5	3181.6	3096.9	3021.8
22.5°	3331.3	3253.1	3055.8	2940.3	2889.5
25°	3243.0	3134.0	2909.7	2770.5	2719.3
27.5°	3137.7	3021.8	2773.7	2614.0	2535.7
30°	3025.5	2896.0	2624.1	2451.0	2359.0
32.5°	2916.5	2760.0	2481.6	2277.5	2192.4
35°	2794.3	2620.8	2321.8	2107.7	2032.6
37.5°	2675.3	2488.1	2172.2	1937.4	1852.7
40°	2549.4	2345.7	2015.7	1774.4	1686.1
42.5°	2420.3	2202.9	1859.4	1607.8	1523.0
45°	2284.4	2056.5	1699.7	1458.1	1376.6
47.5°	2155.2	1914.0	1546.8	1305.2	1230.5
50°	2012.4	1771.1	1397.2	1162.4	1091.3
52.5°	1872.9	1617.9	1254.4	1030.0	965.5
55°	1736.9	1471.8	1104.6	900.9	836.3
57.5°	1597.7	1325.8	972.3	781.9	727.5
60°	1454.8	1182.9	832.8	659.6	605.2
62.5°	1315.7	1043.7	713.7	550.7	523.7
65°	1172.8	897.3	591.4	476.0	465.6
67.5°	1036.9	761.3	476.0	418.0	407.9
70°	894.1	629.0	394.2	360.3	346.6
72.5°	758.1	506.3	329.6	302.5	295.8
75°	625.4	387.4	271.9	248.1	244.9
77.5°	493.0	275.2	214.2	200.5	193.7
80°	370.4	197.3	163.0	149.7	149.7
82.5°	258.2	132.7	112.2	105.3	105.3
85°	146.0	74.6	64.5	64.5	64.5
87.5°	54.4	27.1	27.1	23.8	23.8
90°	2.8	35.4	59.1	74.1	79.8
92.5°	74.1	62.2	71.0	76.9	79.8
95°	192.2	94.5	115.2	130.4	127.2
97.5°	346.2	103.7	150.8	159.9	162.7
100°	523.9	118.4	168.6	192.2	198.2
102.5°	719.0	713.3	174.6	207.0	216.1
105°	899.5	988.5	180.7	213.0	224.9
107.5°	1109.7	1183.5	186.6	218.9	230.8
110°	1311.0	1372.9	517.9	222.1	233.7

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1500.5	1553.5	1503.3	227.7	236.8
115°	1701.4	1751.7	1825.8	455.7	242.9
117.5°	1876.1	1935.2	1985.8	1562.3	787.1
120°	2071.5	2115.7	2169.2	2204.7	1805.1
122.5°	2237.0	2284.5	2343.8	2361.4	2364.5
125°	2405.6	2444.3	2500.6	2521.3	2530.1
127.5°	2559.5	2601.0	2645.7	2675.2	2678.0
130°	2704.6	2752.1	2784.4	2817.1	2814.3
132.5°	2852.6	2891.3	2923.6	2950.3	2947.5
135°	2977.0	3024.5	3050.8	3080.7	3074.7
137.5°	3107.1	3142.5	3172.4	3201.9	3193.1
140°	3234.3	3258.1	3290.4	3317.2	3302.4
142.5°	3341.0	3361.8	3400.1	3423.6	3408.9
145°	3453.5	3450.4	3500.6	3521.4	3506.5
147.5°	3550.9	3542.1	3592.4	3607.1	3595.5
150°	3645.7	3625.0	3672.4	3690.0	3675.3
152.5°	3725.5	3701.9	3746.3	3764.1	3743.4
155°	3802.4	3776.0	3811.6	3829.2	3805.6
157.5°	3864.6	3841.1	3867.8	3888.5	3864.6
160°	3918.0	3900.2	3918.0	3935.6	3914.9
162.5°	3965.2	3947.6	3962.4	3983.1	3956.4
165°	4006.6	3989.0	3997.8	4018.6	3997.8
167.5°	4039.3	4021.3	4030.5	4051.2	4024.6
170°	4066.0	4048.1	4054.0	4074.7	4048.1
172.5°	4083.5	4066.0	4072.0	4092.7	4066.0
175°	4098.3	4077.6	4083.5	4104.3	4074.7
177.5°	4104.3	4083.5	4086.8	4107.5	4080.8
180°	4089.6	4089.6	4089.6	4089.6	4089.6

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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	9.62	10.37	10.67	11.42	12.84	5.59	6.34	6.64	7.39	8.81
	3H	11.29	11.96	12.35	13.02	14.46	6.78	7.45	7.84	8.51	9.94
	4H	11.90	12.53	12.97	13.59	15.04	7.22	7.86	8.30	8.92	10.37
	6H	12.31	12.90	13.39	13.96	15.42	7.54	8.13	8.62	9.19	10.65
	8H	12.44	12.99	13.52	14.07	15.53	7.63	8.19	8.72	9.27	10.72
	12H	12.50	13.03	13.59	14.10	15.58	7.67	8.20	8.76	9.27	10.75
4H	2H	9.63	10.26	10.71	11.32	12.77	6.18	6.81	7.26	7.87	9.32
	3H	11.45	11.98	12.54	13.07	14.52	7.52	8.05	8.61	9.14	10.60
	4H	12.14	12.62	13.23	13.70	15.18	8.07	8.55	9.16	9.63	11.11
	6H	12.65	13.07	13.75	14.17	15.64	8.48	8.90	9.58	10.00	11.48
	8H	12.83	13.21	13.92	14.31	15.80	8.61	9.00	9.71	10.10	11.58
	12H	12.92	13.27	14.03	14.38	15.87	8.68	9.03	9.79	10.13	11.63
8H	4H	12.10	12.49	13.20	13.58	15.07	8.34	8.73	9.44	9.82	11.31
	6H	12.67	12.99	13.79	14.12	15.61	8.86	9.18	9.98	10.32	11.80
	8H	12.88	13.16	14.01	14.28	15.79	9.05	9.33	10.18	10.45	11.96
	12H	13.02	13.26	14.15	14.38	15.92	9.17	9.42	10.30	10.53	12.07
12H	4H	12.05	12.40	13.17	13.51	15.00	8.34	8.69	9.46	9.80	11.30
	6H	12.64	12.92	13.77	14.04	15.55	8.91	9.19	10.04	10.31	11.81
	8H	12.86	13.11	13.99	14.22	15.76	9.12	9.36	10.25	10.48	12.02