

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: P920605

Luminaire Tested: DFN2DIP-SQ4F0-160D090US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920605
REPORT IS A COMBINATION OF REPORTS P901649 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D090US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

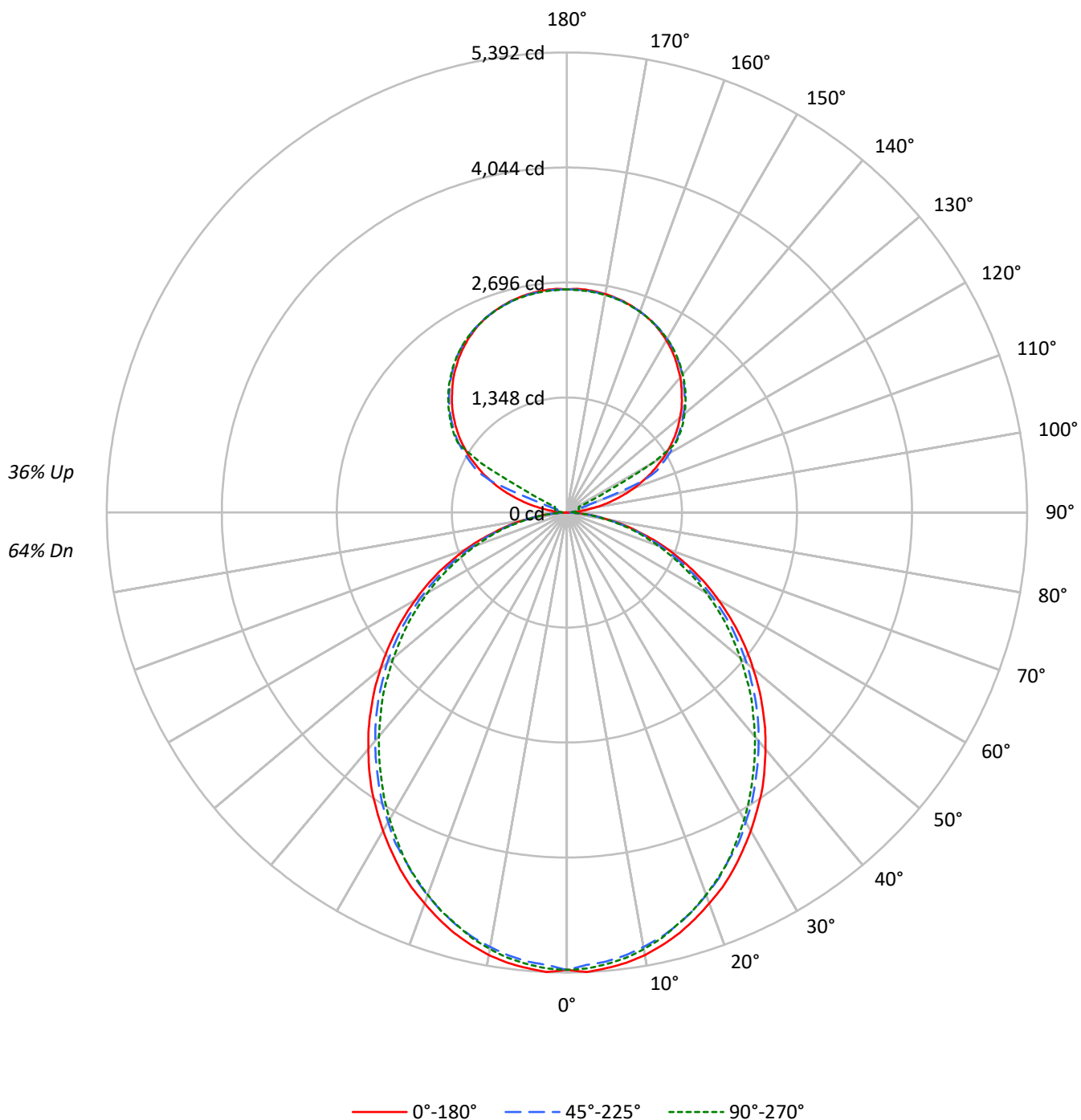
Lumens per Lamp: N/A
Luminaire Lumens: 21309.7 lumens
Efficiency: N/A
Efficacy: 91.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 233.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	110	110	110	110	104	104	104	104	91	91	91	80	80	80	69	69	69
1	101	97	93	89	95	91	87	84	80	77	75	70	68	66	61	60	58
2	92	84	78	73	86	79	74	69	70	66	62	62	58	55	54	51	49
3	84	74	67	61	78	70	63	58	62	57	52	55	50	47	48	45	42
4	77	66	58	51	72	62	55	49	55	49	45	49	44	40	43	39	36
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	38	35	31
6	65	53	44	38	61	50	42	37	45	38	34	40	35	31	35	31	28
7	60	48	40	34	56	45	38	32	40	34	30	36	31	27	32	28	25
8	56	43	35	30	52	41	34	29	37	31	27	33	28	24	29	25	22
9	52	40	32	27	49	38	31	26	34	28	24	30	25	22	27	23	20
10	49	36	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3761	3761	3761
5°	3767	3710	3735
10°	3736	3660	3685
15°	3682	3601	3607
20°	3607	3518	3528
25°	3533	3418	3435
30°	3441	3326	3317
35°	3353	3217	3192
40°	3245	3107	3074
45°	3137	2996	2953
50°	3019	2881	2812
55°	2896	2746	2683
60°	2757	2587	2535
65°	2605	2423	2361
70°	2411	2222	2174
75°	2143	1982	2003
80°	1820	1676	1674
85°	1316	1147	1125

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3137 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	504.5	2.4
10°-20°	1419.5	6.7
20°-30°	2086.1	9.8
30°-40°	2422.9	11.4
40°-50°	2419.9	11.4
50°-60°	2110.1	9.9
60°-70°	1559.8	7.3
70°-80°	882.5	4.1
80°-90°	237.5	1.1
90°-100°	86.2	0.4
100°-110°	321.5	1.5
110°-120°	852.6	4.0
120°-130°	1414.1	6.6
130°-140°	1502.1	7.0
140°-150°	1396.0	6.6
150°-160°	1122.4	5.3
160°-170°	723.2	3.4
170°-180°	248.9	1.2
0°-30°	4010.1	18.8
0°-40°	6433.0	30.2
0°-60°	10963.0	51.4
0°-90°	13642.8	64.0
90°-120°	1260.3	5.9
90°-150°	5572.4	26.1
90°-180°	7667.0	36.0
0°-180°	21309.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5360	5360	5360	5360	5360	
5°	5360	5340	5283	5324	5314	509
15°	5103	5072	5005	5026	5000	1437
25°	4618	4577	4490	4500	4490	2125
35°	3984	3933	3850	3819	3794	2488
45°	3242	3206	3129	3072	3052	2502
55°	2454	2423	2361	2299	2273	2194
65°	1655	1624	1572	1526	1500	1636
75°	866	856	830	799	809	924
85°	211	206	201	185	180	235
90°	2	23	38	47	51	20
95°	123	60	74	83	81	146
105°	575	632	116	136	144	615
115°	1088	1120	1168	291	155	1071
125°	1538	1563	1599	1612	1618	1372
135°	1904	1934	1951	1970	1966	1471
145°	2208	2206	2239	2252	2242	1381
155°	2432	2415	2437	2449	2434	1121
165°	2562	2551	2557	2570	2557	724
175°	2621	2608	2611	2625	2606	249
180°	2615	2615	2615	2615	2615	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5360.3	5360.3	5360.3	5360.3	5360.3
2.5°	5391.5	5365.7	5308.9	5360.3	5350.4
5°	5360.3	5340.1	5283.2	5324.2	5314.3
7.5°	5324.2	5293.6	5236.7	5278.3	5267.8
10°	5267.8	5231.8	5170.0	5211.0	5195.7
12.5°	5190.3	5159.6	5097.8	5123.5	5113.1
15°	5102.7	5072.1	5004.8	5025.6	4999.9
17.5°	4994.5	4963.8	4896.6	4922.2	4896.6
20°	4875.7	4845.2	4772.9	4788.3	4768.0
22.5°	4757.7	4711.2	4643.9	4643.9	4633.5
25°	4618.2	4577.2	4489.7	4499.6	4489.7
27.5°	4463.4	4427.3	4360.6	4345.4	4319.6
30°	4309.2	4267.7	4190.6	4175.2	4154.5
32.5°	4144.1	4113.5	4030.8	3999.7	3978.9
35°	3984.4	3933.0	3850.4	3819.2	3793.6
37.5°	3804.0	3757.5	3674.9	3638.7	3613.1
40°	3618.5	3577.0	3494.4	3448.5	3427.7
42.5°	3438.1	3396.6	3314.5	3262.6	3231.9
45°	3242.3	3206.2	3128.6	3072.2	3051.5
47.5°	3051.5	3015.4	2932.8	2875.9	2845.3
50°	2850.2	2824.5	2752.4	2680.1	2654.5
52.5°	2654.5	2618.4	2551.7	2494.7	2458.7
55°	2453.8	2422.6	2360.8	2299.0	2273.3
57.5°	2252.5	2226.8	2159.6	2097.7	2077.0
60°	2051.2	2031.0	1958.9	1901.9	1886.6
62.5°	1855.5	1819.4	1768.0	1716.6	1695.8
65°	1654.8	1623.6	1572.2	1525.8	1500.0
67.5°	1448.6	1422.4	1376.5	1340.3	1319.6
70°	1257.7	1237.0	1190.5	1154.4	1134.2
72.5°	1062.0	1041.2	1015.5	979.4	964.1
75°	865.6	855.8	829.6	798.9	809.3
77.5°	690.7	669.9	659.5	644.2	628.9
80°	515.7	510.2	499.8	484.5	474.2
82.5°	350.5	350.5	345.6	324.9	324.9
85°	211.1	206.1	201.2	185.4	180.5
87.5°	93.0	82.6	72.2	56.9	51.4
90°	1.8	22.7	37.7	47.4	51.0
92.5°	47.4	39.8	45.4	49.2	51.0
95°	123.0	60.4	73.7	83.3	81.4
97.5°	221.4	66.3	96.4	102.2	104.0
100°	335.0	75.8	107.9	123.0	126.7
102.5°	459.8	456.2	111.7	132.3	138.2
105°	575.2	632.1	115.5	136.2	143.8
107.5°	709.6	756.8	119.3	140.0	147.7
110°	838.4	878.0	331.2	142.0	149.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	959.5	993.4	961.3	145.6	151.4
115°	1088.0	1120.2	1167.6	291.4	155.2
117.5°	1199.7	1237.5	1269.8	999.1	503.3
120°	1324.6	1353.0	1387.2	1409.8	1154.3
122.5°	1430.5	1460.9	1498.8	1510.0	1512.1
125°	1538.3	1563.1	1599.0	1612.3	1617.9
127.5°	1636.8	1663.3	1691.9	1710.7	1712.5
130°	1729.6	1760.0	1780.6	1801.5	1799.7
132.5°	1824.2	1848.9	1869.6	1886.7	1884.9
135°	1903.8	1934.1	1950.9	1970.0	1966.3
137.5°	1986.9	2009.6	2028.7	2047.5	2041.9
140°	2068.2	2083.5	2104.2	2121.2	2111.9
142.5°	2136.6	2149.8	2174.3	2189.3	2180.0
145°	2208.5	2206.4	2238.6	2251.9	2242.4
147.5°	2270.7	2265.1	2297.2	2306.7	2299.2
150°	2331.4	2318.2	2348.5	2359.7	2350.3
152.5°	2382.4	2367.3	2395.6	2407.1	2393.8
155°	2431.6	2414.8	2437.4	2448.7	2433.6
157.5°	2471.4	2456.3	2473.4	2486.6	2471.4
160°	2505.5	2494.1	2505.5	2516.8	2503.5
162.5°	2535.6	2524.4	2533.8	2547.1	2530.0
165°	2562.2	2550.9	2556.6	2569.8	2556.6
167.5°	2583.1	2571.6	2577.4	2590.7	2573.6
170°	2600.1	2588.7	2592.5	2605.7	2588.7
172.5°	2611.4	2600.1	2603.9	2617.2	2600.1
175°	2620.8	2607.5	2611.4	2624.6	2605.7
177.5°	2624.6	2611.4	2613.4	2626.6	2609.6
180°	2615.2	2615.2	2615.2	2615.2	2615.2

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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	13.09	14.09	13.92	14.94	16.00	12.64	13.65	13.47	14.50	15.55
	3H	14.76	15.67	15.60	16.52	17.61	14.27	15.17	15.11	16.03	17.12
	4H	15.36	16.21	16.22	17.08	18.17	14.87	15.72	15.72	16.58	17.68
	6H	15.77	16.56	16.64	17.43	18.54	15.27	16.06	16.14	16.93	18.04
	8H	15.88	16.63	16.76	17.52	18.63	15.38	16.13	16.26	17.02	18.13
	12H	15.94	16.65	16.82	17.53	18.67	15.43	16.14	16.31	17.03	18.16
4H	2H	13.57	14.42	14.43	15.28	16.38	13.21	14.06	14.07	14.93	16.02
	3H	15.45	16.16	16.32	17.06	18.17	15.04	15.75	15.92	16.65	17.76
	4H	16.17	16.82	17.06	17.72	18.85	15.75	16.40	16.63	17.29	18.43
	6H	16.70	17.26	17.60	18.18	19.32	16.27	16.83	17.17	17.75	18.89
	8H	16.86	17.38	17.76	18.29	19.45	16.42	16.94	17.32	17.86	19.01
	12H	16.94	17.41	17.86	18.34	19.50	16.49	16.96	17.41	17.89	19.05
8H	4H	16.38	16.91	17.28	17.82	18.97	16.01	16.53	16.91	17.44	18.59
	6H	17.02	17.46	17.95	18.41	19.56	16.64	17.07	17.57	18.03	19.18
	8H	17.25	17.63	18.19	18.58	19.75	16.86	17.24	17.80	18.19	19.36
	12H	17.39	17.73	18.33	18.67	19.89	16.98	17.32	17.92	18.26	19.48
12H	4H	16.38	16.85	17.30	17.78	18.94	16.01	16.48	16.93	17.41	18.57
	6H	17.06	17.44	17.99	18.39	19.56	16.68	17.07	17.62	18.02	19.18
	8H	17.31	17.65	18.25	18.59	19.80	16.93	17.27	17.87	18.21	19.42