

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: P920607

Luminaire Tested: DFN2DIP-SQ4F0-160D090US935-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920607
REPORT IS A COMBINATION OF REPORTS P901650 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D090US935-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

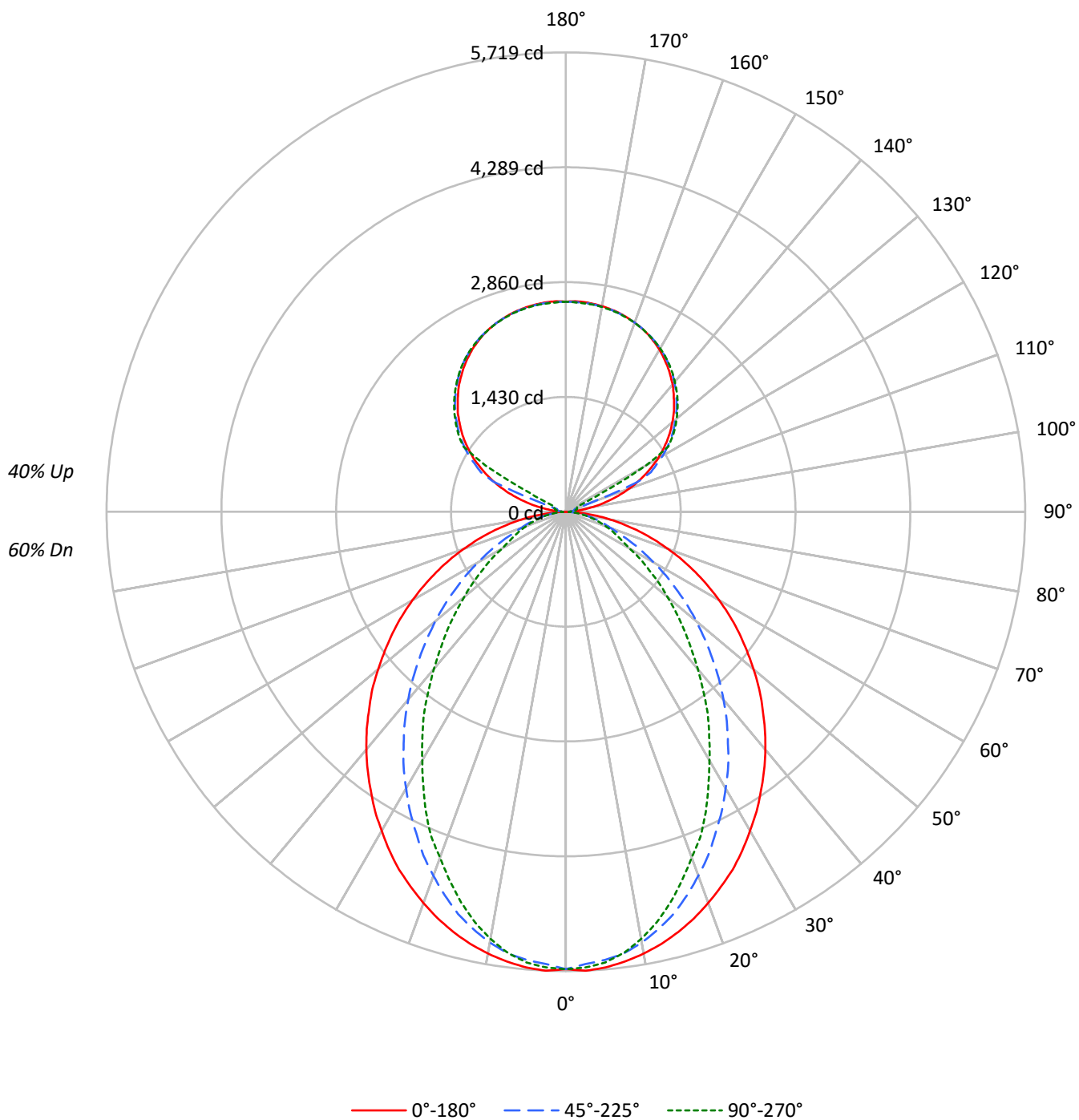
Lumens per Lamp: N/A
Luminaire Lumens: 19381.0 lumens
Efficiency: N/A
Efficacy: 83.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

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
RCR																	
0	110	110	110	110	102	102	102	102	89	89	89		77	77	77		66
1	101	97	93	89	94	90	87	84	79	77	74		69	67	65		59
2	92	85	79	74	86	80	75	70	70	66	63		61	58	55		53
3	84	75	68	62	79	71	64	59	62	57	53		54	51	48		47
4	78	67	59	53	72	63	56	51	56	50	46		49	45	41		43
5	72	60	52	46	67	57	50	44	50	45	40		44	40	36		39
6	66	54	46	40	62	51	44	39	46	40	35		40	36	32		35
7	61	49	41	36	57	47	39	34	42	36	32		37	32	29		32
8	57	45	37	32	53	43	36	31	38	32	28		34	29	26		30
9	53	41	34	29	50	39	32	28	35	29	25		31	27	23		28
10	50	38	31	26	47	36	29	25	32	27	23		29	24	21		26

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3995	3995	3995
5°	4001	3932	3958
10°	3962	3856	3830
15°	3907	3729	3632
20°	3835	3554	3389
25°	3761	3358	3154
30°	3662	3157	2855
35°	3564	2940	2593
40°	3465	2716	2292
45°	3350	2468	2019
50°	3232	2216	1752
55°	3107	1948	1496
60°	2964	1667	1233
65°	2798	1382	1111
70°	2598	1115	1007
75°	2347	985	919
80°	1982	829	801
85°	1380	558	610

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3350 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	533.6	2.8
10°-20°	1464.9	7.6
20°-30°	2056.6	10.6
30°-40°	2241.8	11.6
40°-50°	2060.5	10.6
50°-60°	1618.2	8.3
60°-70°	1053.3	5.4
70°-80°	542.2	2.8
80°-90°	143.0	0.7
90°-100°	86.2	0.4
100°-110°	321.5	1.7
110°-120°	852.6	4.4
120°-130°	1414.1	7.3
130°-140°	1502.1	7.8
140°-150°	1396.0	7.2
150°-160°	1122.4	5.8
160°-170°	723.2	3.7
170°-180°	248.9	1.3
0°-30°	4055.1	20.9
0°-40°	6296.9	32.5
0°-60°	9975.6	51.5
0°-90°	11714.2	60.4
90°-120°	1260.3	6.5
90°-150°	5572.4	28.8
90°-180°	7667.0	39.6
0°-180°	19381.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5694	5694	5694	5694	5694	
5°	5694	5668	5601	5647	5632	540
15°	5415	5358	5184	5086	5034	1526
25°	4916	4751	4410	4200	4122	2261
35°	4236	3973	3520	3195	3081	2651
45°	3463	3117	2576	2210	2087	2674
55°	2633	2231	1674	1366	1268	2353
65°	1778	1360	897	722	706	1762
75°	948	587	412	376	371	1003
85°	221	113	98	98	98	254
90°	2	23	38	47	51	18
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°	5693.6	5693.6	5693.6	5693.6	5693.6
2.5°	5719.3	5693.6	5636.7	5688.7	5678.3
5°	5693.6	5667.9	5600.6	5647.1	5631.8
7.5°	5647.1	5616.5	5544.3	5564.5	5538.9
10°	5585.4	5549.3	5446.5	5430.7	5400.0
12.5°	5508.2	5461.8	5322.4	5291.8	5235.0
15°	5415.3	5358.5	5183.6	5085.7	5034.3
17.5°	5307.1	5224.5	5008.1	4894.9	4812.4
20°	5183.6	5080.2	4822.7	4694.2	4580.6
22.5°	5049.6	4930.9	4631.9	4457.0	4379.9
25°	4915.7	4750.6	4410.5	4199.5	4121.9
27.5°	4756.1	4580.6	4204.4	3962.3	3843.7
30°	4586.0	4389.8	3977.6	3715.2	3575.8
32.5°	4421.0	4183.7	3761.6	3452.3	3323.2
35°	4235.6	3972.6	3519.5	3194.7	3081.1
37.5°	4055.2	3771.5	3292.6	2936.7	2808.2
40°	3864.4	3555.6	3055.3	2689.6	2555.7
42.5°	3668.7	3339.0	2818.6	2437.1	2308.6
45°	3462.6	3117.2	2576.4	2210.2	2086.6
47.5°	3266.9	2901.2	2344.7	1978.4	1865.3
50°	3050.4	2684.7	2117.8	1761.9	1654.2
52.5°	2838.9	2452.4	1901.3	1561.3	1463.4
55°	2632.8	2230.9	1674.5	1365.5	1267.7
57.5°	2421.7	2009.6	1473.9	1185.2	1102.6
60°	2205.3	1793.1	1262.2	999.9	917.3
62.5°	1994.2	1582.1	1081.8	834.7	793.8
65°	1777.8	1360.1	896.6	721.6	705.8
67.5°	1571.7	1154.0	721.6	633.6	618.3
70°	1355.2	953.4	597.5	546.1	525.4
72.5°	1149.1	767.5	499.6	458.7	448.2
75°	948.0	587.1	412.2	376.1	371.2
77.5°	747.3	417.1	324.7	303.9	293.6
80°	561.5	299.0	247.1	226.9	226.9
82.5°	391.4	201.2	170.0	159.6	159.6
85°	221.4	113.1	97.9	97.9	97.9
87.5°	82.6	41.0	41.0	36.1	36.1
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	12.89	13.82	13.76	14.70	15.82	8.85	9.78	9.72	10.66	11.78
	3H	14.58	15.41	15.47	16.30	17.45	10.05	10.88	10.93	11.77	12.92
	4H	15.20	15.98	16.10	16.88	18.03	10.51	11.29	11.40	12.19	13.34
	6H	15.63	16.35	16.54	17.25	18.42	10.83	11.55	11.74	12.46	13.62
	8H	15.76	16.44	16.68	17.37	18.53	10.93	11.61	11.84	12.53	13.70
	12H	15.83	16.48	16.75	17.40	18.59	10.97	11.62	11.90	12.54	13.73
4H	2H	12.92	13.70	13.83	14.60	15.76	9.46	10.24	10.37	11.14	12.30
	3H	14.77	15.41	15.68	16.35	17.51	10.82	11.47	11.74	12.40	13.57
	4H	15.47	16.06	16.39	16.98	18.18	11.38	11.97	12.30	12.89	14.09
	6H	15.99	16.50	16.93	17.45	18.64	11.80	12.31	12.74	13.26	14.46
	8H	16.17	16.64	17.11	17.59	18.80	11.93	12.41	12.87	13.35	14.56
	12H	16.27	16.70	17.23	17.66	18.87	12.00	12.43	12.96	13.39	14.61
8H	4H	15.44	15.91	16.38	16.86	18.07	11.67	12.14	12.61	13.09	14.29
	6H	16.01	16.41	16.98	17.39	18.60	12.19	12.58	13.15	13.57	14.77
	8H	16.23	16.58	17.21	17.56	18.78	12.38	12.73	13.36	13.70	14.93
	12H	16.38	16.69	17.36	17.66	18.93	12.51	12.81	13.48	13.78	15.05
12H	4H	15.40	15.82	16.36	16.79	18.00	11.68	12.10	12.63	13.07	14.28
	6H	15.99	16.34	16.97	17.31	18.54	12.24	12.59	13.21	13.56	14.79
	8H	16.22	16.52	17.20	17.49	18.77	12.46	12.76	13.43	13.73	15.00