

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: P917717

Luminaire Tested: DFN2DIP-SQ4F0-090D160US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917717
REPORT IS A COMBINATION OF REPORTS P901729 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-090D160US930-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

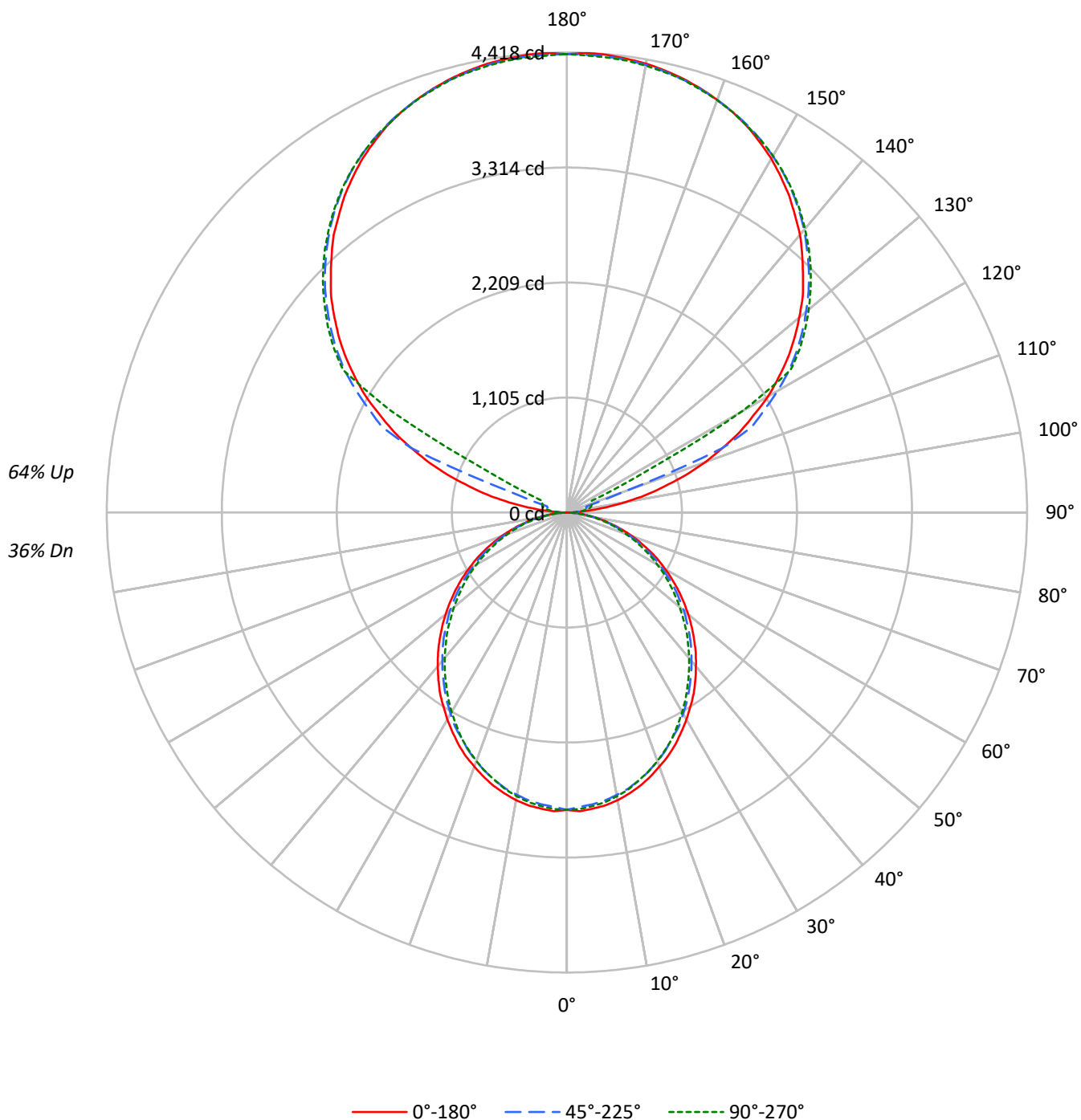
Lumens per Lamp: N/A
Luminaire Lumens: 20178.6 lumens
Efficiency: N/A
Efficacy: 98.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 204.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.983
Total Harmonic Distortion (THDi): 0.073
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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	43	43	43
1	95	90	87	83	86	82	79	76	66	64	62	52	50	49	38	37	37
2	86	79	73	68	78	72	67	62	58	54	51	45	43	41	34	32	31
3	79	69	62	57	71	63	57	52	51	47	43	40	37	34	30	28	26
4	72	61	54	48	65	56	49	44	45	40	37	36	32	29	27	24	23
5	66	55	47	41	59	50	43	38	40	35	31	32	28	25	24	22	20
6	61	49	41	35	55	45	38	33	36	31	27	29	25	22	22	19	17
7	56	44	36	31	51	40	33	29	33	28	24	26	22	20	20	17	15
8	52	40	32	27	47	36	30	25	30	25	21	24	20	17	18	16	14
9	48	36	29	24	44	33	27	22	27	22	19	22	18	16	17	14	12
10	45	33	26	21	41	30	24	20	25	20	17	20	17	14	16	13	11

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2003	2003	2003
5°	2007	1976	1989
10°	1990	1950	1963
15°	1961	1918	1921
20°	1921	1874	1879
25°	1882	1821	1830
30°	1833	1771	1767
35°	1786	1713	1700
40°	1728	1655	1637
45°	1671	1596	1573
50°	1608	1534	1498
55°	1543	1463	1429
60°	1468	1378	1351
65°	1387	1290	1258
70°	1284	1183	1158
75°	1141	1056	1067
80°	970	893	892
85°	700	611	599

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2361 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	268.7	1.3
10°-20°	756.1	3.7
20°-30°	1111.2	5.5
30°-40°	1290.5	6.4
40°-50°	1288.9	6.4
50°-60°	1123.9	5.6
60°-70°	830.8	4.1
70°-80°	470.1	2.3
80°-90°	131.8	0.7
90°-100°	145.1	0.7
100°-110°	541.2	2.7
110°-120°	1435.3	7.1
120°-130°	2380.5	11.8
130°-140°	2528.6	12.5
140°-150°	2350.1	11.6
150°-160°	1889.4	9.4
160°-170°	1217.5	6.0
170°-180°	419.0	2.1
0°-30°	2136.0	10.6
0°-40°	3426.5	17.0
0°-60°	5839.4	28.9
0°-90°	7272.1	36.0
90°-120°	2121.6	10.5
90°-150°	9380.7	46.5
90°-180°	12907.0	64.0
0°-180°	20178.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2855	2855	2855	2855	2855	
5°	2855	2844	2814	2836	2831	271
15°	2718	2702	2666	2677	2663	765
25°	2460	2438	2391	2397	2391	1132
35°	2122	2095	2051	2034	2021	1325
45°	1727	1708	1666	1636	1625	1333
55°	1307	1290	1257	1225	1211	1169
65°	881	865	837	813	799	871
75°	461	456	442	426	431	492
85°	112	110	107	99	96	125
90°	3	38	64	80	86	19
95°	207	102	124	140	137	245
105°	968	1064	194	229	242	1035
115°	1832	1886	1966	491	261	1803
125°	2590	2631	2692	2714	2724	2310
135°	3205	3256	3284	3316	3310	2476
145°	3718	3714	3768	3791	3775	2325
155°	4093	4065	4103	4122	4097	1886
165°	4313	4294	4304	4326	4304	1219
175°	4412	4390	4396	4418	4386	420
180°	4402	4402	4402	4402	4402	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2855.1	2855.1	2855.1	2855.1	2855.1
2.5°	2871.7	2858.0	2827.8	2855.1	2849.9
5°	2855.1	2844.3	2814.1	2835.9	2830.6
7.5°	2835.9	2819.6	2789.3	2811.5	2805.9
10°	2805.9	2786.7	2753.8	2775.6	2767.4
12.5°	2764.5	2748.2	2715.4	2729.0	2723.5
15°	2718.0	2701.7	2665.8	2676.9	2663.2
17.5°	2660.2	2643.9	2608.1	2621.8	2608.1
20°	2597.1	2580.7	2542.3	2550.4	2539.7
22.5°	2534.1	2509.4	2473.5	2473.5	2468.0
25°	2459.8	2438.0	2391.4	2396.7	2391.4
27.5°	2377.4	2358.2	2322.7	2314.6	2300.9
30°	2295.3	2273.1	2232.0	2223.9	2212.9
32.5°	2207.3	2191.0	2147.0	2130.5	2119.4
35°	2122.3	2094.9	2050.9	2034.3	2020.6
37.5°	2026.2	2001.4	1957.4	1938.2	1924.5
40°	1927.4	1905.3	1861.2	1836.8	1825.8
42.5°	1831.2	1809.1	1765.4	1737.8	1721.5
45°	1727.0	1707.8	1666.4	1636.4	1625.4
47.5°	1625.4	1606.1	1562.1	1531.9	1515.6
50°	1518.2	1504.5	1466.0	1427.6	1413.9
52.5°	1413.9	1394.6	1359.1	1328.9	1309.6
55°	1307.0	1290.4	1257.4	1224.6	1210.9
57.5°	1199.8	1186.1	1150.3	1117.4	1106.3
60°	1092.6	1081.8	1043.3	1013.1	1004.9
62.5°	988.3	969.1	941.7	914.4	903.3
65°	881.4	864.8	837.4	812.7	799.0
67.5°	771.6	757.7	733.1	714.0	702.9
70°	669.9	658.8	634.1	614.9	604.1
72.5°	565.7	554.6	540.9	521.7	513.6
75°	461.1	455.8	441.9	425.6	431.1
77.5°	367.9	356.9	351.3	343.2	335.0
80°	274.7	271.7	266.2	258.0	252.6
82.5°	186.7	186.7	184.1	173.0	173.0
85°	112.4	109.8	107.2	98.7	96.1
87.5°	49.5	43.9	38.5	30.3	27.4
90°	3.0	38.2	63.5	79.8	85.9
92.5°	79.8	66.9	76.4	82.8	85.9
95°	206.9	101.7	124.1	140.3	137.0
97.5°	372.6	111.6	162.2	172.1	175.1
100°	564.0	127.5	181.6	206.9	213.4
102.5°	774.0	767.9	188.0	222.8	232.6
105°	968.4	1064.1	194.4	229.3	242.1
107.5°	1194.6	1274.1	200.9	235.7	248.5
110°	1411.4	1478.0	557.6	239.0	251.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1615.3	1672.4	1618.3	245.2	254.9
115°	1831.6	1885.7	1965.5	490.6	261.4
117.5°	2019.7	2083.2	2137.7	1681.9	847.3
120°	2230.0	2277.6	2335.1	2373.3	1943.3
122.5°	2408.1	2459.2	2523.1	2542.0	2545.4
125°	2589.7	2631.3	2691.9	2714.2	2723.7
127.5°	2755.4	2800.1	2848.1	2879.9	2882.9
130°	2911.7	2962.7	2997.5	3032.7	3029.6
132.5°	3070.9	3112.5	3147.3	3176.1	3173.1
135°	3204.8	3255.9	3284.3	3316.4	3309.9
137.5°	3344.8	3383.0	3415.1	3446.9	3437.5
140°	3481.7	3507.4	3542.2	3571.0	3555.1
142.5°	3596.7	3619.0	3660.3	3685.6	3669.7
145°	3717.8	3714.3	3768.5	3790.7	3774.9
147.5°	3822.5	3813.1	3867.2	3883.1	3870.5
150°	3924.7	3902.3	3953.5	3972.4	3956.5
152.5°	4010.5	3985.2	4032.9	4052.2	4029.9
155°	4093.4	4065.0	4103.2	4122.1	4096.8
157.5°	4160.4	4135.0	4163.7	4186.1	4160.4
160°	4217.9	4198.5	4217.9	4236.8	4214.4
162.5°	4268.6	4249.7	4265.5	4287.8	4259.1
165°	4313.2	4294.3	4303.7	4326.1	4303.7
167.5°	4348.4	4329.1	4338.9	4361.2	4332.5
170°	4377.1	4357.9	4364.2	4386.5	4357.9
172.5°	4396.0	4377.1	4383.5	4405.9	4377.1
175°	4411.9	4389.6	4396.0	4418.3	4386.5
177.5°	4418.3	4396.0	4399.4	4421.8	4393.0
180°	4402.4	4402.4	4402.4	4402.4	4402.4

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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	8.25	9.00	9.32	10.07	11.53	7.81	8.55	8.87	9.62	11.08
	3H	9.91	10.58	10.98	11.66	13.13	9.42	10.09	10.49	11.16	12.64
	4H	10.49	11.13	11.58	12.21	13.69	10.00	10.63	11.09	11.71	13.20
	6H	10.89	11.47	11.99	12.56	14.05	10.39	10.97	11.49	12.06	13.55
	8H	10.99	11.55	12.09	12.65	14.14	10.49	11.05	11.59	12.15	13.63
	12H	11.04	11.57	12.14	12.66	14.17	10.53	11.06	11.63	12.15	13.66
4H	2H	8.70	9.33	9.79	10.41	11.90	8.34	8.98	9.44	10.06	11.54
	3H	10.56	11.09	11.66	12.20	13.69	10.15	10.68	11.25	11.79	13.28
	4H	11.27	11.76	12.38	12.85	14.37	10.85	11.33	11.95	12.43	13.95
	6H	11.78	12.20	12.90	13.32	14.83	11.35	11.77	12.47	12.89	14.40
	8H	11.93	12.32	13.05	13.44	14.96	11.50	11.89	12.61	13.00	14.52
	12H	12.00	12.36	13.13	13.48	15.01	11.55	11.91	12.68	13.03	14.56
8H	4H	11.46	11.85	12.57	12.96	14.49	11.08	11.47	12.20	12.58	14.11
	6H	12.09	12.41	13.23	13.57	15.09	11.71	12.03	12.84	13.18	14.70
	8H	12.31	12.59	13.45	13.73	15.27	11.92	12.20	13.06	13.34	14.88
	12H	12.44	12.69	13.59	13.82	15.40	12.03	12.28	13.18	13.41	14.99
12H	4H	11.44	11.79	12.57	12.92	14.45	11.07	11.42	12.20	12.55	14.08
	6H	12.12	12.40	13.26	13.54	15.08	11.75	12.03	12.89	13.16	14.71
	8H	12.36	12.61	13.50	13.74	15.32	11.98	12.23	13.12	13.36	14.94