

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: P923219

Luminaire Tested: DFN2DIP-SQ4F0-110D070US940-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923219
REPORT IS A COMBINATION OF REPORTS P901608 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D070US940-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

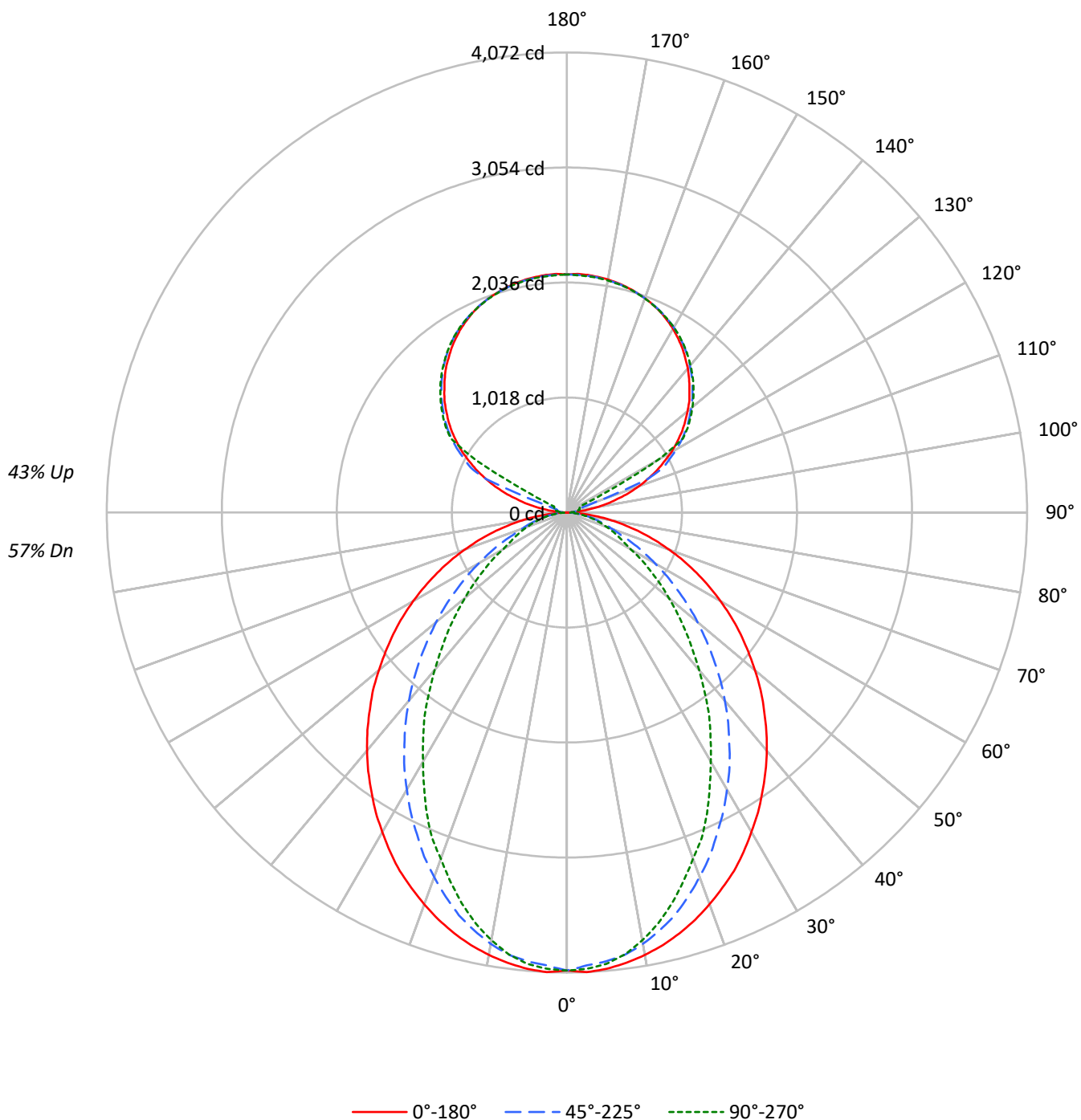
Lumens per Lamp: N/A
Luminaire Lumens: 14517.1 lumens
Efficiency: N/A
Efficacy: 92.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 157.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	109	109	109	109	101	101	101	101	87	87	87	75	75	75	63	63	63
1	100	96	92	89	93	89	86	83	78	75	73	67	65	63	57	55	54
2	92	84	78	73	85	79	74	69	69	65	61	59	56	54	50	48	47
3	84	75	68	62	78	70	64	59	61	56	52	53	49	46	45	43	40
4	77	66	59	53	72	62	56	50	55	49	45	47	43	40	41	38	35
5	71	60	52	46	66	56	49	44	49	44	39	43	39	35	37	34	31
6	66	54	46	40	61	51	43	38	45	39	35	39	35	31	34	30	28
7	61	49	41	35	57	46	39	34	41	35	31	36	31	28	31	27	25
8	57	44	37	32	53	42	35	30	37	32	28	33	28	25	29	25	22
9	53	41	33	28	49	38	32	27	34	29	25	30	26	23	27	23	20
10	49	37	30	26	46	35	29	25	32	26	23	28	24	21	25	21	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2845	2845	2845
5°	2849	2800	2818
10°	2821	2746	2727
15°	2782	2655	2586
20°	2731	2531	2413
25°	2678	2391	2246
30°	2607	2248	2033
35°	2538	2094	1846
40°	2468	1934	1632
45°	2386	1757	1438
50°	2301	1578	1248
55°	2213	1387	1065
60°	2110	1187	878
65°	1993	984	791
70°	1850	794	717
75°	1671	701	654
80°	1411	590	570
85°	983	397	434

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2386 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	379.9	2.6
10°-20°	1043.0	7.2
20°-30°	1464.4	10.1
30°-40°	1596.2	11.0
40°-50°	1467.1	10.1
50°-60°	1152.2	7.9
60°-70°	750.0	5.2
70°-80°	386.0	2.7
80°-90°	102.3	0.7
90°-100°	69.5	0.5
100°-110°	259.0	1.8
110°-120°	686.8	4.7
120°-130°	1139.1	7.8
130°-140°	1209.9	8.3
140°-150°	1124.5	7.7
150°-160°	904.1	6.2
160°-170°	582.6	4.0
170°-180°	200.5	1.4
0°-30°	2887.3	19.9
0°-40°	4483.6	30.9
0°-60°	7102.9	48.9
0°-90°	8341.2	57.5
90°-120°	1015.2	7.0
90°-150°	4488.7	30.9
90°-180°	6176.0	42.5
0°-180°	14517.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4054	4054	4054	4054	4054	
5°	4054	4036	3988	4021	4010	384
15°	3856	3815	3691	3621	3584	1087
25°	3500	3382	3140	2990	2935	1610
35°	3016	2829	2506	2275	2194	1888
45°	2466	2220	1834	1574	1486	1904
55°	1875	1588	1192	972	903	1675
65°	1266	968	638	514	502	1255
75°	675	418	294	268	264	714
85°	158	81	70	70	70	181
90°	1	18	30	38	41	14
95°	99	49	59	67	66	117
105°	463	509	93	110	116	495
115°	876	902	940	235	125	863
125°	1239	1259	1288	1299	1303	1105
135°	1534	1558	1572	1587	1584	1185
145°	1779	1777	1803	1814	1806	1113
155°	1959	1945	1963	1972	1960	903
165°	2064	2055	2059	2070	2059	583
175°	2111	2100	2104	2114	2099	201
180°	2107	2107	2107	2107	2107	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4054.0	4054.0	4054.0	4054.0	4054.0
2.5°	4072.3	4054.0	4013.5	4050.5	4043.1
5°	4054.0	4035.7	3987.8	4020.9	4010.0
7.5°	4020.9	3999.1	3947.7	3962.1	3943.8
10°	3976.9	3951.2	3878.0	3866.7	3845.0
12.5°	3922.0	3888.9	3789.7	3767.8	3727.3
15°	3855.8	3815.4	3690.8	3621.1	3584.5
17.5°	3778.8	3720.0	3565.9	3485.2	3426.5
20°	3690.8	3617.2	3433.9	3342.4	3261.4
22.5°	3595.5	3510.9	3298.1	3173.5	3118.6
25°	3500.1	3382.5	3140.4	2990.2	2934.9
27.5°	3386.4	3261.4	2993.7	2821.2	2736.7
30°	3265.4	3125.6	2832.2	2645.3	2546.0
32.5°	3147.8	2978.8	2678.3	2458.1	2366.2
35°	3015.9	2828.6	2506.0	2274.8	2193.8
37.5°	2887.4	2685.4	2344.4	2091.0	1999.6
40°	2751.6	2531.7	2175.5	1915.0	1819.7
42.5°	2612.2	2377.5	2007.0	1735.3	1643.8
45°	2465.5	2219.5	1834.5	1573.7	1485.8
47.5°	2326.1	2065.7	1669.5	1408.6	1328.1
50°	2171.9	1911.6	1508.0	1254.5	1177.9
52.5°	2021.3	1746.1	1353.8	1111.7	1042.0
55°	1874.6	1588.5	1192.2	972.3	902.7
57.5°	1724.4	1430.8	1049.4	843.9	785.1
60°	1570.2	1276.8	898.8	711.9	653.2
62.5°	1420.0	1126.5	770.3	594.4	565.2
65°	1265.8	968.4	638.4	513.8	502.5
67.5°	1119.1	821.7	513.8	451.1	440.2
70°	964.9	678.9	425.4	388.9	374.1
72.5°	818.1	546.5	355.8	326.5	319.1
75°	674.9	418.0	293.5	267.8	264.3
77.5°	532.1	297.0	231.2	216.4	209.0
80°	399.8	212.9	175.9	161.6	161.6
82.5°	278.7	143.2	121.1	113.7	113.7
85°	157.7	80.6	69.6	69.6	69.6
87.5°	58.8	29.2	29.2	25.7	25.7
90°	1.4	18.3	30.4	38.2	41.1
92.5°	38.2	32.0	36.6	39.7	41.1
95°	99.0	48.7	59.4	67.1	65.5
97.5°	178.3	53.4	77.7	82.4	83.8
100°	269.9	61.0	86.9	99.0	102.1
102.5°	370.3	367.5	90.0	106.6	111.3
105°	463.4	509.2	93.0	109.7	115.8
107.5°	571.6	609.7	96.1	112.8	119.0
110°	675.4	707.2	266.8	114.4	120.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	772.9	800.2	774.4	117.3	122.0
115°	876.5	902.3	940.5	234.8	125.1
117.5°	966.4	996.8	1022.9	804.8	405.5
120°	1067.0	1089.8	1117.4	1135.7	929.9
122.5°	1152.3	1176.7	1207.4	1216.4	1218.0
125°	1239.2	1259.1	1288.1	1298.8	1303.2
127.5°	1318.5	1339.8	1362.8	1378.0	1379.5
130°	1393.2	1417.6	1434.3	1451.2	1449.7
132.5°	1469.4	1489.3	1506.0	1519.7	1518.3
135°	1533.5	1557.9	1571.6	1586.9	1583.9
137.5°	1600.4	1618.8	1634.1	1649.4	1644.8
140°	1666.0	1678.3	1695.0	1708.7	1701.1
142.5°	1721.0	1731.7	1751.4	1763.5	1756.0
145°	1779.0	1777.4	1803.2	1813.9	1806.3
147.5°	1829.1	1824.6	1850.5	1858.1	1852.1
150°	1877.9	1867.3	1891.8	1900.8	1893.2
152.5°	1919.0	1906.9	1929.8	1938.9	1928.3
155°	1958.7	1945.1	1963.4	1972.5	1960.3
157.5°	1990.7	1978.6	1992.3	2003.0	1990.7
160°	2018.3	2009.0	2018.3	2027.3	2016.6
162.5°	2042.6	2033.5	2041.0	2051.7	2038.0
165°	2063.9	2054.9	2059.3	2070.0	2059.3
167.5°	2080.7	2071.4	2076.2	2086.9	2073.1
170°	2094.4	2085.3	2088.3	2099.0	2085.3
172.5°	2103.5	2094.4	2097.6	2108.2	2094.4
175°	2111.1	2100.4	2103.5	2114.2	2099.0
177.5°	2114.2	2103.5	2105.1	2115.9	2102.0
180°	2106.6	2106.6	2106.6	2106.6	2106.6

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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	11.46	12.36	12.36	13.27	14.43	7.42	8.32	8.32	9.23	10.39
	3H	13.15	13.95	14.06	14.87	16.06	8.62	9.42	9.53	10.34	11.53
	4H	13.76	14.52	14.69	15.45	16.64	9.07	9.83	9.99	10.75	11.95
	6H	14.19	14.89	15.13	15.82	17.03	9.39	10.09	10.33	11.02	12.23
	8H	14.32	14.98	15.27	15.93	17.14	9.49	10.15	10.43	11.10	12.31
	12H	14.39	15.02	15.34	15.96	17.19	9.53	10.16	10.48	11.11	12.34
4H	2H	11.49	12.24	12.42	13.17	14.37	8.03	8.78	8.96	9.71	10.91
	3H	13.33	13.96	14.27	14.91	16.13	9.38	10.01	10.33	10.97	12.18
	4H	14.03	14.60	14.98	15.55	16.79	9.94	10.51	10.89	11.46	12.70
	6H	14.55	15.04	15.51	16.02	17.25	10.36	10.85	11.32	11.83	13.07
	8H	14.73	15.19	15.69	16.16	17.41	10.49	10.95	11.46	11.92	13.17
	12H	14.83	15.24	15.81	16.23	17.48	10.56	10.97	11.54	11.96	13.22
8H	4H	14.00	14.46	14.96	15.43	16.68	10.22	10.68	11.19	11.65	12.90
	6H	14.57	14.95	15.56	15.96	17.21	10.75	11.13	11.74	12.14	13.39
	8H	14.79	15.13	15.79	16.13	17.39	10.94	11.27	11.94	12.27	13.54
	12H	14.94	15.23	15.94	16.22	17.54	11.06	11.36	12.06	12.35	13.66
12H	4H	13.95	14.37	14.94	15.35	16.61	10.23	10.65	11.22	11.63	12.89
	6H	14.55	14.88	15.55	15.88	17.15	10.80	11.13	11.80	12.13	13.40
	8H	14.77	15.07	15.78	16.06	17.38	11.01	11.31	12.01	12.30	13.61