

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: P909461

Luminaire Tested: DFN2DIP-SQ4F0-070D160US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909461
REPORT IS A COMBINATION OF REPORTS P901725 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D160US840-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

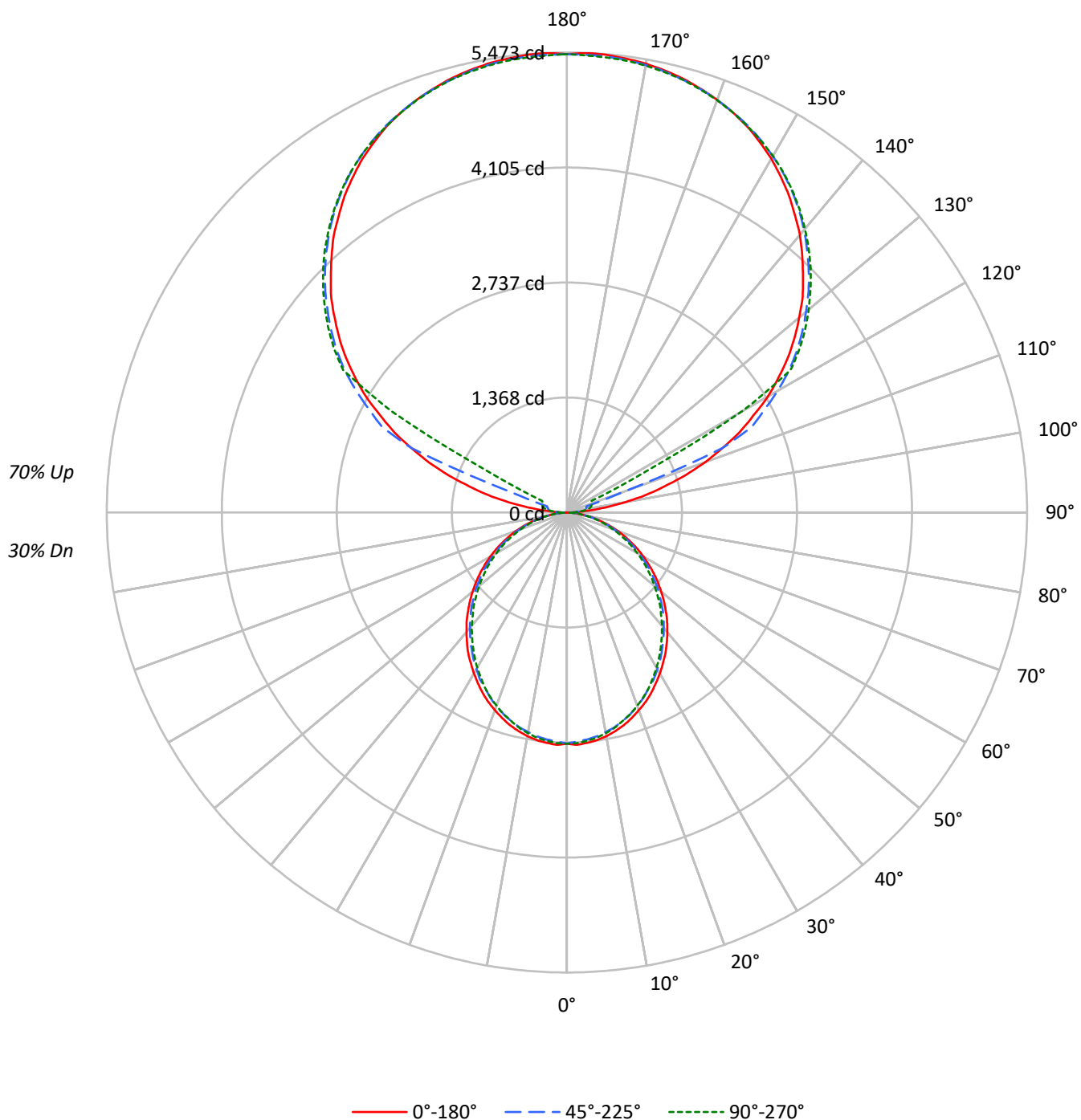
Lumens per Lamp: N/A
Luminaire Lumens: 22994.7 lumens
Efficiency: N/A
Efficacy: 125.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 183.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	102	102	102	102	92	92	92	92	72	72	72	55	55	55	38	38	38
1	93	89	85	82	84	80	77	74	63	61	59	48	47	45	34	33	32
2	85	78	72	67	76	70	65	61	56	52	49	42	40	38	30	28	27
3	78	68	61	56	69	62	56	51	49	45	41	37	34	32	26	25	23
4	71	60	53	47	63	55	48	43	43	39	35	33	30	27	23	21	20
5	65	54	46	40	58	49	42	37	39	34	30	30	26	24	21	19	17
6	60	48	40	35	53	43	37	32	35	30	26	27	23	21	19	17	15
7	55	43	36	30	49	39	32	28	31	26	23	24	21	18	17	15	13
8	51	39	32	27	46	36	29	24	29	24	20	22	19	16	16	14	12
9	47	36	28	23	43	32	26	22	26	21	18	20	17	14	15	12	11
10	44	33	26	21	40	30	23	19	24	19	16	19	15	13	14	11	10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1930	1930	1930
5°	1933	1904	1917
10°	1917	1878	1891
15°	1889	1848	1851
20°	1851	1805	1810
25°	1813	1754	1763
30°	1766	1707	1702
35°	1721	1651	1638
40°	1665	1594	1577
45°	1610	1538	1515
50°	1549	1478	1443
55°	1486	1409	1377
60°	1415	1328	1301
65°	1337	1243	1212
70°	1237	1140	1116
75°	1099	1017	1028
80°	934	860	859
85°	676	589	577

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2921 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	258.9	1.1
10°-20°	728.4	3.2
20°-30°	1070.5	4.7
30°-40°	1243.3	5.4
40°-50°	1241.7	5.4
50°-60°	1082.8	4.7
60°-70°	800.4	3.5
70°-80°	452.9	2.0
80°-90°	129.1	0.6
90°-100°	179.8	0.8
100°-110°	670.3	2.9
110°-120°	1777.8	7.7
120°-130°	2948.5	12.8
130°-140°	3132.1	13.6
140°-150°	2910.9	12.7
150°-160°	2340.3	10.2
160°-170°	1508.0	6.6
170°-180°	519.0	2.3
0°-30°	2057.8	8.9
0°-40°	3301.1	14.4
0°-60°	5625.6	24.5
0°-90°	7008.0	30.5
90°-120°	2627.9	11.4
90°-150°	11619.4	50.5
90°-180°	15987.0	69.5
0°-180°	22994.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2751	2751	2751	2751	2751	
5°	2751	2740	2711	2732	2727	261
15°	2618	2603	2568	2579	2566	737
25°	2370	2349	2304	2309	2304	1090
35°	2045	2018	1976	1960	1947	1277
45°	1664	1645	1605	1576	1566	1284
55°	1259	1243	1211	1180	1166	1126
65°	849	833	807	783	770	840
75°	444	439	426	410	415	474
85°	108	106	103	95	93	121
90°	4	47	79	99	106	21
95°	256	126	154	174	170	304
105°	1200	1318	241	284	300	1282
115°	2269	2336	2435	608	324	2234
125°	3208	3259	3334	3362	3374	2861
135°	3970	4033	4068	4108	4100	3066
145°	4605	4601	4668	4695	4676	2880
155°	5070	5035	5082	5106	5074	2336
165°	5342	5319	5331	5358	5331	1509
175°	5465	5437	5445	5473	5433	520
180°	5453	5453	5453	5453	5453	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2750.6	2750.6	2750.6	2750.6	2750.6
2.5°	2766.6	2753.4	2724.2	2750.6	2745.5
5°	2750.6	2740.3	2711.1	2732.1	2727.0
7.5°	2732.1	2716.3	2687.2	2708.6	2703.2
10°	2703.2	2684.6	2652.9	2674.0	2666.1
12.5°	2663.3	2647.7	2616.0	2629.1	2623.7
15°	2618.5	2602.7	2568.2	2578.9	2565.7
17.5°	2562.8	2547.2	2512.6	2525.9	2512.6
20°	2501.9	2486.3	2449.2	2457.1	2446.7
22.5°	2441.3	2417.5	2383.0	2383.0	2377.6
25°	2369.9	2348.7	2303.9	2309.0	2303.9
27.5°	2290.4	2271.9	2237.7	2229.8	2216.6
30°	2211.3	2189.9	2150.4	2142.5	2131.8
32.5°	2126.5	2110.8	2068.4	2052.5	2041.7
35°	2044.6	2018.2	1975.8	1959.8	1946.6
37.5°	1952.0	1928.1	1885.7	1867.2	1854.0
40°	1856.8	1835.5	1793.1	1769.6	1758.9
42.5°	1764.2	1742.9	1700.8	1674.2	1658.4
45°	1663.8	1645.3	1605.4	1576.5	1565.8
47.5°	1565.8	1547.3	1504.9	1475.7	1460.1
50°	1462.6	1449.4	1412.3	1375.3	1362.1
52.5°	1362.1	1343.6	1309.4	1280.2	1261.6
55°	1259.1	1243.1	1211.4	1179.7	1166.5
57.5°	1155.9	1142.7	1108.1	1076.4	1065.8
60°	1052.6	1042.2	1005.2	976.0	968.2
62.5°	952.1	933.6	907.3	880.9	870.2
65°	849.2	833.1	806.8	782.9	769.7
67.5°	743.4	729.9	706.3	687.8	677.1
70°	645.4	634.8	610.9	592.4	582.0
72.5°	544.9	534.3	521.1	502.6	494.7
75°	444.2	439.2	425.7	410.0	415.4
77.5°	354.5	343.8	338.4	330.5	322.8
80°	264.6	261.9	256.5	248.6	243.3
82.5°	179.9	179.9	177.3	166.7	166.7
85°	108.4	105.8	103.3	95.1	92.6
87.5°	47.7	42.4	37.1	29.2	26.4
90°	3.7	47.4	78.7	98.9	106.3
92.5°	98.9	82.9	94.6	102.6	106.3
95°	256.3	126.0	153.7	173.8	169.7
97.5°	461.5	138.3	201.0	213.2	216.9
100°	698.6	157.9	224.9	256.3	264.3
102.5°	958.7	951.2	232.9	276.0	288.1
105°	1199.5	1318.1	240.9	284.0	299.8
107.5°	1479.7	1578.1	248.8	292.0	307.8
110°	1748.2	1830.7	690.6	296.1	311.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	2000.7	2071.5	2004.5	303.7	315.8
115°	2268.8	2335.7	2434.6	607.7	323.8
117.5°	2501.6	2580.3	2647.9	2083.3	1049.6
120°	2762.2	2821.2	2892.4	2939.7	2407.0
122.5°	2982.8	3046.1	3125.2	3148.7	3152.9
125°	3207.7	3259.2	3334.3	3361.9	3373.7
127.5°	3412.9	3468.3	3527.8	3567.1	3570.9
130°	3606.5	3669.8	3712.9	3756.4	3752.7
132.5°	3803.8	3855.3	3898.4	3934.0	3930.3
135°	3969.6	4032.9	4068.0	4107.8	4099.9
137.5°	4143.0	4190.3	4230.1	4269.5	4257.8
140°	4312.6	4344.4	4387.6	4423.2	4403.5
142.5°	4455.0	4482.7	4533.8	4565.2	4545.5
145°	4605.0	4600.7	4667.8	4695.4	4675.8
147.5°	4734.8	4723.0	4790.1	4809.8	4794.2
150°	4861.3	4833.6	4896.9	4920.4	4900.7
152.5°	4967.6	4936.2	4995.3	5019.2	4991.6
155°	5070.2	5035.1	5082.5	5105.9	5074.5
157.5°	5153.2	5121.8	5157.4	5185.1	5153.2
160°	5224.4	5200.5	5224.4	5247.9	5220.2
162.5°	5287.3	5263.8	5283.4	5311.1	5275.5
165°	5342.5	5319.1	5330.8	5358.4	5330.8
167.5°	5386.1	5362.2	5374.4	5402.0	5366.4
170°	5421.7	5397.8	5405.7	5433.4	5397.8
172.5°	5445.1	5421.7	5429.6	5457.3	5421.7
175°	5464.8	5437.1	5445.1	5472.8	5433.4
177.5°	5472.8	5445.1	5449.3	5477.0	5441.4
180°	5453.1	5453.1	5453.1	5453.1	5453.1

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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	7.42	8.13	8.53	9.23	10.76	6.98	7.68	8.08	8.79	10.31
	3H	9.07	9.71	10.19	10.82	12.36	8.58	9.22	9.70	10.33	11.87
	4H	9.66	10.26	10.78	11.37	12.92	9.16	9.77	10.29	10.88	12.43
	6H	10.05	10.61	11.19	11.72	13.28	9.55	10.11	10.69	11.22	12.78
	8H	10.15	10.68	11.29	11.81	13.37	9.65	10.18	10.79	11.31	12.86
	12H	10.20	10.70	11.34	11.83	13.40	9.69	10.19	10.83	11.32	12.89
4H	2H	7.86	8.47	9.00	9.58	11.13	7.51	8.11	8.64	9.22	10.77
	3H	9.72	10.22	10.86	11.36	12.92	9.31	9.82	10.45	10.95	12.51
	4H	10.43	10.89	11.57	12.02	13.60	10.01	10.47	11.15	11.60	13.18
	6H	10.94	11.34	12.09	12.49	14.06	10.51	10.91	11.66	12.06	13.63
	8H	11.09	11.46	12.24	12.60	14.19	10.65	11.02	11.80	12.17	13.75
	12H	11.16	11.49	12.32	12.65	14.24	10.71	11.04	11.87	12.20	13.79
8H	4H	10.62	10.99	11.76	12.13	13.72	10.24	10.61	11.39	11.75	13.34
	6H	11.25	11.55	12.41	12.74	14.32	10.86	11.17	12.03	12.35	13.94
	8H	11.47	11.73	12.64	12.90	14.50	11.07	11.34	12.25	12.51	14.11
	12H	11.60	11.83	12.77	12.99	14.63	11.18	11.42	12.36	12.58	14.22
12H	4H	10.59	10.93	11.76	12.08	13.68	10.23	10.56	11.39	11.72	13.31
	6H	11.27	11.54	12.45	12.71	14.31	10.90	11.17	12.08	12.33	13.94
	8H	11.51	11.75	12.69	12.91	14.55	11.13	11.37	12.31	12.53	14.17