

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: P904004

Luminaire Tested: DFN2DIP-SQ4F0-070D160US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904004
REPORT IS A COMBINATION OF REPORTS P900205 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D160US830-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

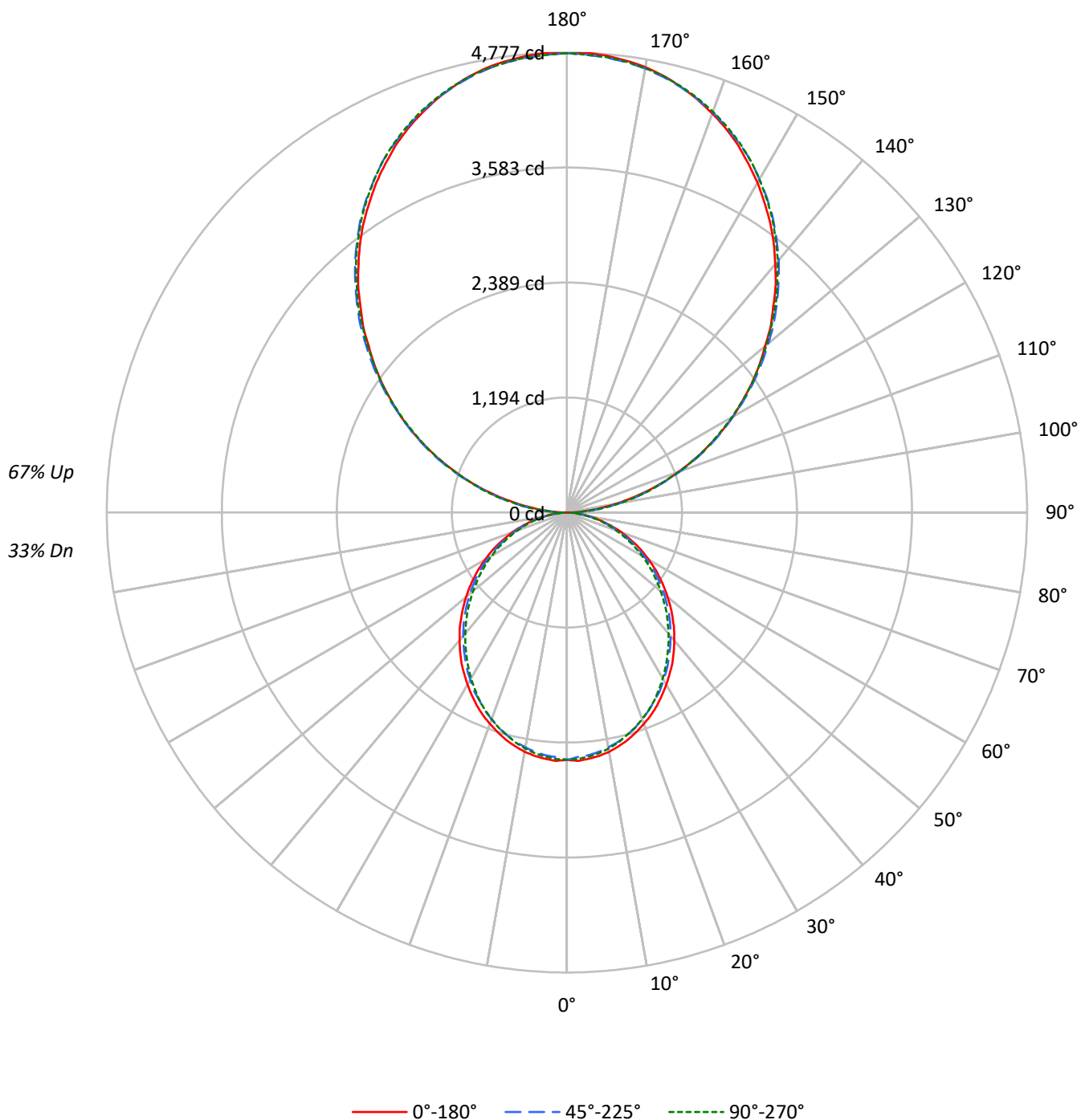
Lumens per Lamp: N/A
Luminaire Lumens: 19879.2 lumens
Efficiency: N/A
Efficacy: 108.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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	103	103	103	103	93	93	93	93	74	74	74	56	56	56	40	40	40
1	94	90	86	83	85	81	78	75	65	62	60	50	48	47	36	35	34
2	86	78	72	67	77	71	66	61	57	53	50	43	41	39	31	30	29
3	78	69	62	56	70	62	56	51	50	46	42	38	36	33	28	26	24
4	71	61	53	47	64	55	48	43	44	39	36	34	31	28	25	23	21
5	65	54	46	40	59	49	42	37	39	35	31	31	27	24	22	20	18
6	60	48	40	35	54	44	37	32	36	30	27	28	24	21	20	18	16
7	55	44	36	30	50	40	33	28	32	27	23	25	21	19	18	16	14
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13
9	48	36	29	24	43	33	26	22	27	22	18	21	17	15	16	13	12
10	45	33	26	21	40	30	24	20	25	20	17	19	16	13	14	12	10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1801	1801	1801
5°	1804	1777	1789
10°	1790	1753	1765
15°	1763	1725	1728
20°	1728	1685	1689
25°	1692	1637	1645
30°	1648	1593	1589
35°	1606	1541	1529
40°	1554	1488	1472
45°	1503	1435	1414
50°	1446	1379	1347
55°	1387	1315	1285
60°	1320	1239	1214
65°	1248	1160	1131
70°	1155	1064	1041
75°	1026	949	960
80°	871	803	802
85°	630	549	538

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3754 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	241.6	1.2
10°-20°	679.9	3.4
20°-30°	999.1	5.0
30°-40°	1160.4	5.8
40°-50°	1159.0	5.8
50°-60°	1010.6	5.1
60°-70°	747.1	3.8
70°-80°	422.7	2.1
80°-90°	125.1	0.6
90°-100°	295.1	1.5
100°-110°	937.8	4.7
110°-120°	1604.9	8.1
120°-130°	2110.7	10.6
130°-140°	2369.1	11.9
140°-150°	2323.2	11.7
150°-160°	1948.8	9.8
160°-170°	1292.4	6.5
170°-180°	451.7	2.3
0°-30°	1920.6	9.7
0°-40°	3081.0	15.5
0°-60°	5250.6	26.4
0°-90°	6545.4	32.9
90°-120°	2837.8	14.3
90°-150°	9640.8	48.5
90°-180°	13334.0	67.1
0°-180°	19879.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2567	2567	2567	2567	2567	
5°	2567	2558	2530	2550	2545	244
15°	2444	2429	2397	2407	2395	688
25°	2212	2192	2150	2155	2150	1018
35°	1908	1884	1844	1829	1817	1192
45°	1553	1536	1498	1471	1461	1198
55°	1175	1160	1131	1101	1089	1051
65°	793	778	753	731	718	784
75°	415	410	397	383	388	443
85°	101	99	96	89	86	113
90°	4	52	141	132	137	19
95°	210	250	257	257	250	234
105°	866	877	886	893	893	914
115°	1610	1634	1626	1622	1610	1593
125°	2342	2378	2367	2354	2350	2093
135°	3030	3074	3083	3079	3067	2342
145°	3678	3707	3730	3734	3719	2298
155°	4206	4218	4230	4251	4238	1936
165°	4576	4571	4571	4600	4580	1291
175°	4761	4750	4741	4770	4745	452
180°	4770	4770	4770	4770	4770	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2567.2	2567.2	2567.2	2567.2	2567.2
2.5°	2582.2	2569.8	2542.6	2567.2	2562.5
5°	2567.2	2557.6	2530.3	2550.0	2545.2
7.5°	2550.0	2535.3	2508.0	2528.0	2523.0
10°	2523.0	2505.7	2476.1	2495.8	2488.4
12.5°	2485.8	2471.2	2441.6	2453.8	2448.8
15°	2443.9	2429.2	2397.0	2407.0	2394.6
17.5°	2392.0	2377.4	2345.1	2357.5	2345.1
20°	2335.1	2320.5	2285.9	2293.3	2283.6
22.5°	2278.6	2256.4	2224.1	2224.1	2219.1
25°	2211.9	2192.2	2150.3	2155.0	2150.3
27.5°	2137.7	2120.4	2088.5	2081.1	2068.8
30°	2063.9	2043.9	2007.0	1999.7	1989.7
32.5°	1984.7	1970.1	1930.5	1915.6	1905.6
35°	1908.3	1883.7	1844.1	1829.2	1816.8
37.5°	1821.8	1799.6	1760.0	1742.8	1730.4
40°	1733.1	1713.2	1673.6	1651.6	1641.6
42.5°	1646.6	1626.7	1587.4	1562.5	1547.8
45°	1552.8	1535.6	1498.4	1471.4	1461.4
47.5°	1461.4	1444.2	1404.6	1377.3	1362.7
50°	1365.1	1352.7	1318.1	1283.6	1271.3
52.5°	1271.3	1254.1	1222.1	1194.9	1177.5
55°	1175.2	1160.3	1130.7	1101.1	1088.7
57.5°	1078.8	1066.5	1034.3	1004.7	994.8
60°	982.4	972.7	938.2	911.0	903.6
62.5°	888.6	871.4	846.8	822.2	812.2
65°	792.6	777.6	753.0	730.8	718.4
67.5°	693.8	681.3	659.2	642.0	632.0
70°	602.4	592.5	570.1	552.9	543.2
72.5°	508.6	498.7	486.4	469.1	461.8
75°	414.6	409.9	397.3	382.7	387.7
77.5°	330.8	320.8	315.8	308.5	301.2
80°	246.9	244.4	239.4	232.1	227.1
82.5°	167.9	167.9	165.5	155.6	155.6
85°	101.1	98.8	96.4	88.8	86.4
87.5°	44.5	39.6	34.6	27.2	24.6
90°	4.3	51.7	140.9	132.3	136.6
92.5°	89.2	120.8	125.1	129.4	129.4
95°	209.9	250.2	257.4	257.4	250.2
97.5°	349.4	386.8	402.7	402.7	402.7
100°	510.5	543.6	555.1	555.1	550.7
102.5°	680.1	704.6	720.4	724.7	720.4
105°	865.6	877.1	885.8	893.0	893.0
107.5°	1049.7	1067.0	1067.0	1069.9	1049.7
110°	1228.0	1251.0	1251.0	1251.0	1239.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1420.7	1445.2	1440.9	1429.4	1420.7
115°	1610.5	1633.5	1626.4	1622.0	1610.5
117.5°	1798.9	1830.5	1810.4	1798.9	1787.4
120°	1988.8	2020.3	1988.8	1988.8	1975.8
122.5°	2161.2	2201.6	2181.4	2169.9	2161.2
125°	2342.5	2378.4	2366.9	2354.0	2349.7
127.5°	2519.3	2563.9	2548.1	2530.8	2519.3
130°	2684.7	2736.5	2729.3	2720.6	2704.8
132.5°	2870.2	2910.5	2913.3	2893.2	2881.7
135°	3029.8	3074.4	3083.1	3078.7	3067.2
137.5°	3208.1	3244.0	3251.3	3248.4	3231.1
140°	3364.9	3400.8	3421.0	3421.0	3405.1
142.5°	3526.0	3561.9	3573.4	3577.7	3561.9
145°	3678.4	3707.1	3730.1	3734.4	3718.6
147.5°	3814.9	3850.9	3868.2	3875.4	3859.5
150°	3955.8	3980.4	3996.2	4009.1	3996.2
152.5°	4081.0	4105.4	4125.6	4141.3	4125.6
155°	4206.1	4217.6	4230.5	4250.7	4237.8
157.5°	4313.9	4322.6	4329.8	4358.5	4338.4
160°	4410.2	4418.9	4423.3	4447.7	4430.4
162.5°	4499.4	4499.4	4503.7	4531.1	4510.9
165°	4575.7	4571.3	4571.3	4600.1	4580.0
167.5°	4644.7	4631.7	4631.7	4660.5	4640.3
170°	4696.4	4684.9	4680.7	4709.4	4684.9
172.5°	4732.4	4720.9	4716.6	4745.3	4720.9
175°	4761.2	4749.7	4741.0	4769.8	4745.3
177.5°	4777.0	4765.5	4756.8	4781.3	4756.8
180°	4769.8	4769.8	4769.8	4769.8	4769.8

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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	7.50	8.22	8.59	9.31	10.81	7.05	7.78	8.14	8.87	10.36
	3H	9.15	9.80	10.25	10.90	12.41	8.66	9.31	9.76	10.41	11.92
	4H	9.74	10.35	10.85	11.45	12.97	9.24	9.86	10.35	10.96	12.48
	6H	10.13	10.70	11.25	11.80	13.33	9.63	10.20	10.75	11.30	12.83
	8H	10.23	10.78	11.36	11.89	13.42	9.73	10.27	10.86	11.39	12.92
	12H	10.28	10.79	11.41	11.91	13.45	9.77	10.28	10.90	11.40	12.94
4H	2H	7.94	8.56	9.06	9.66	11.18	7.59	8.21	8.70	9.30	10.82
	3H	9.80	10.32	10.92	11.44	12.97	9.39	9.91	10.52	11.03	12.57
	4H	10.51	10.99	11.64	12.10	13.65	10.09	10.56	11.22	11.68	13.23
	6H	11.02	11.43	12.16	12.57	14.11	10.59	11.00	11.73	12.14	13.68
	8H	11.17	11.55	12.31	12.68	14.24	10.74	11.11	11.87	12.24	13.80
	12H	11.24	11.59	12.39	12.73	14.29	10.79	11.14	11.94	12.28	13.84
8H	4H	10.70	11.08	11.83	12.21	13.77	10.32	10.70	11.46	11.83	13.39
	6H	11.33	11.64	12.48	12.81	14.37	10.95	11.26	12.10	12.43	13.99
	8H	11.55	11.82	12.71	12.98	14.55	11.16	11.43	12.32	12.58	14.16
	12H	11.68	11.92	12.84	13.07	14.68	11.27	11.51	12.43	12.66	14.27
12H	4H	10.68	11.02	11.83	12.16	13.73	10.31	10.65	11.46	11.80	13.36
	6H	11.36	11.63	12.52	12.78	14.36	10.99	11.26	12.15	12.41	13.99
	8H	11.60	11.84	12.76	12.99	14.60	11.22	11.46	12.38	12.61	14.22