

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: P920509

Luminaire Tested: DFN2DIP-SQ4F0-110D120US935-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920509
REPORT IS A COMBINATION OF REPORTS P901697 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D120US935-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

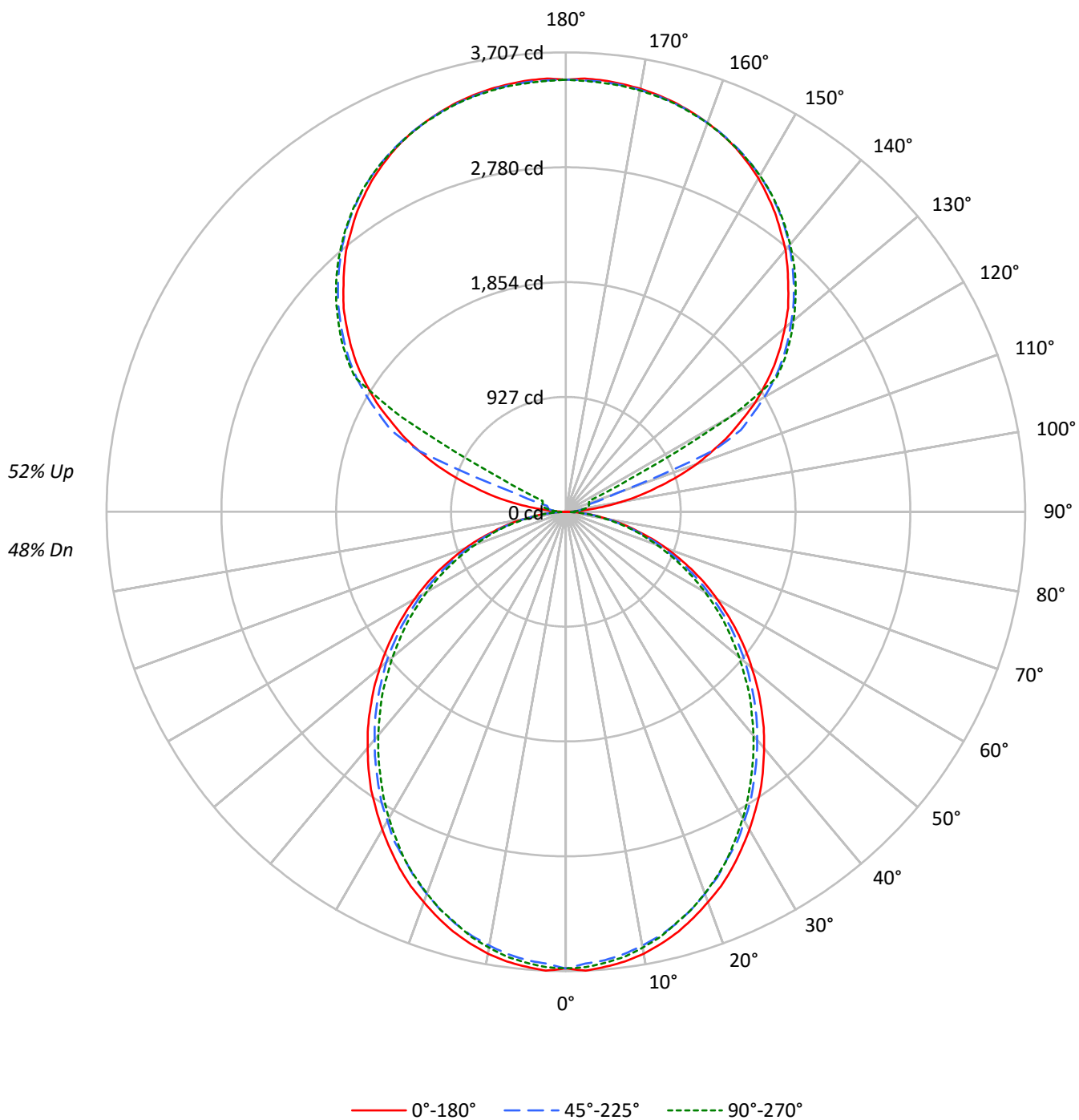
Lumens per Lamp: N/A
Luminaire Lumens: 19604.9 lumens
Efficiency: N/A
Efficacy: 100.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 195.2
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					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
RCR																				
0	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48	48	48
1	97	93	89	86	89	86	82	79	72	70	67	59	58	56	48	47	46	40	40	40
2	89	81	75	70	81	75	70	65	63	59	56	52	49	47	42	40	39	34	34	34
3	81	71	64	58	74	66	60	54	56	51	47	46	43	40	37	35	33	29	29	29
4	74	63	55	49	68	58	51	46	49	44	40	41	37	34	33	31	28	25	25	25
5	68	56	48	42	62	52	45	40	44	39	34	37	33	30	30	27	25	21	21	21
6	62	50	42	37	57	47	40	34	40	34	30	33	29	26	27	24	22	19	19	19
7	58	46	38	32	53	42	35	30	36	31	26	30	26	23	25	22	19	17	17	17
8	54	41	34	28	49	38	32	27	33	27	24	28	23	20	23	20	17	15	15	15
9	50	38	30	25	46	35	28	24	30	25	21	26	21	18	21	18	16	13	13	13
10	47	35	27	23	43	32	26	21	28	23	19	24	19	17	20	16	14	12	12	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2586	2586	2586
5°	2590	2550	2568
10°	2569	2516	2534
15°	2531	2476	2480
20°	2480	2418	2425
25°	2429	2350	2362
30°	2366	2287	2281
35°	2305	2212	2195
40°	2231	2136	2113
45°	2157	2060	2030
50°	2076	1980	1933
55°	1991	1888	1845
60°	1895	1779	1743
65°	1791	1666	1623
70°	1658	1528	1495
75°	1473	1363	1377
80°	1252	1152	1151
85°	905	789	773

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2157 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	346.9	1.8
10°-20°	975.9	5.0
20°-30°	1434.2	7.3
30°-40°	1665.7	8.5
40°-50°	1663.7	8.5
50°-60°	1450.7	7.4
60°-70°	1072.4	5.5
70°-80°	606.7	3.1
80°-90°	166.3	0.8
90°-100°	115.0	0.6
100°-110°	428.6	2.2
110°-120°	1136.8	5.8
120°-130°	1885.4	9.6
130°-140°	2002.8	10.2
140°-150°	1861.3	9.5
150°-160°	1496.5	7.6
160°-170°	964.3	4.9
170°-180°	331.9	1.7
0°-30°	2757.0	14.1
0°-40°	4422.7	22.6
0°-60°	7537.0	38.4
0°-90°	9382.4	47.9
90°-120°	1680.4	8.6
90°-150°	7429.9	37.9
90°-180°	10223.0	52.1
0°-180°	19604.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3685	3685	3685	3685	3685	
5°	3685	3671	3632	3660	3654	350
15°	3508	3487	3441	3455	3437	988
25°	3175	3147	3087	3094	3087	1461
35°	2739	2704	2647	2626	2608	1711
45°	2229	2204	2151	2112	2098	1720
55°	1687	1666	1623	1580	1563	1508
65°	1138	1116	1081	1049	1031	1125
75°	595	588	570	549	556	635
85°	145	142	138	127	124	162
90°	2	30	50	63	68	18
95°	164	81	98	111	108	194
105°	767	843	154	182	192	820
115°	1451	1494	1557	389	207	1428
125°	2051	2084	2132	2150	2157	1829
135°	2538	2579	2601	2627	2622	1961
145°	2945	2942	2985	3002	2990	1842
155°	3242	3220	3250	3265	3245	1494
165°	3416	3401	3409	3426	3409	965
175°	3494	3477	3482	3500	3474	333
180°	3487	3487	3487	3487	3487	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3685.2	3685.2	3685.2	3685.2	3685.2
2.5°	3706.6	3688.9	3649.9	3685.2	3678.4
5°	3685.2	3671.3	3632.2	3660.4	3653.6
7.5°	3660.4	3639.4	3600.3	3628.8	3621.7
10°	3621.7	3596.8	3554.4	3582.5	3572.0
12.5°	3568.3	3547.2	3504.8	3522.4	3515.3
15°	3508.1	3487.0	3440.8	3455.1	3437.4
17.5°	3433.7	3412.7	3366.4	3384.1	3366.4
20°	3352.1	3331.0	3281.4	3291.9	3278.1
22.5°	3270.9	3238.9	3192.7	3192.7	3185.5
25°	3175.0	3146.9	3086.7	3093.5	3086.7
27.5°	3068.6	3043.8	2997.9	2987.4	2969.8
30°	2962.6	2934.0	2881.0	2870.5	2856.2
32.5°	2849.0	2828.0	2771.2	2749.8	2735.5
35°	2739.3	2704.0	2647.1	2625.7	2608.0
37.5°	2615.2	2583.3	2526.5	2501.6	2484.0
40°	2487.8	2459.2	2402.4	2370.8	2356.6
42.5°	2363.7	2335.1	2278.7	2243.0	2222.0
45°	2229.1	2204.2	2150.9	2112.2	2097.9
47.5°	2097.9	2073.1	2016.3	1977.2	1956.1
50°	1959.5	1941.9	1892.2	1842.6	1825.0
52.5°	1825.0	1800.1	1754.3	1715.1	1690.3
55°	1687.0	1665.5	1623.1	1580.5	1562.9
57.5°	1548.6	1530.9	1484.7	1442.2	1427.9
60°	1410.2	1396.4	1346.7	1307.6	1297.1
62.5°	1275.7	1250.9	1215.5	1180.2	1165.9
65°	1137.6	1116.2	1080.9	1049.0	1031.3
67.5°	995.9	977.9	946.3	921.5	907.2
70°	864.7	850.4	818.5	793.7	779.7
72.5°	730.1	715.8	698.2	673.4	662.8
75°	595.1	588.4	570.3	549.3	556.5
77.5°	474.8	460.5	453.4	442.9	432.4
80°	354.6	350.8	343.6	333.1	326.0
82.5°	241.0	241.0	237.6	223.3	223.3
85°	145.2	141.7	138.4	127.4	124.1
87.5°	63.9	56.7	49.6	39.1	35.3
90°	2.4	30.2	50.4	63.2	68.0
92.5°	63.2	53.0	60.5	65.6	68.0
95°	163.8	80.6	98.2	111.2	108.5
97.5°	295.2	88.4	128.5	136.3	138.7
100°	446.7	101.0	143.8	163.8	169.0
102.5°	613.0	608.2	148.9	176.5	184.3
105°	767.0	842.8	154.0	181.6	191.7
107.5°	946.2	1009.1	159.1	186.7	196.8
110°	1117.8	1170.6	441.6	189.3	199.2

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1279.4	1324.6	1281.8	194.2	201.9
115°	1450.7	1493.6	1556.8	388.6	207.1
117.5°	1599.6	1650.0	1693.2	1332.0	671.1
120°	1766.3	1804.0	1849.5	1879.8	1539.1
122.5°	1907.4	1947.8	1998.5	2013.4	2016.1
125°	2051.2	2084.1	2132.1	2149.7	2157.2
127.5°	2182.4	2217.8	2255.8	2281.0	2283.4
130°	2306.1	2346.6	2374.1	2402.0	2399.6
132.5°	2432.2	2465.2	2492.8	2515.6	2513.2
135°	2538.3	2578.8	2601.2	2626.7	2621.7
137.5°	2649.2	2679.4	2704.9	2730.1	2722.6
140°	2757.7	2778.0	2805.6	2828.4	2815.8
142.5°	2848.7	2866.4	2899.1	2919.1	2906.6
145°	2944.6	2941.9	2984.7	3002.5	2989.8
147.5°	3027.6	3020.1	3063.0	3075.6	3065.7
150°	3108.5	3090.8	3131.3	3146.3	3133.7
152.5°	3176.5	3156.4	3194.2	3209.5	3191.8
155°	3242.1	3219.6	3249.9	3264.9	3244.8
157.5°	3295.1	3275.1	3297.9	3315.5	3295.1
160°	3340.7	3325.4	3340.7	3355.7	3338.0
162.5°	3380.9	3365.9	3378.5	3396.1	3373.4
165°	3416.2	3401.2	3408.7	3426.4	3408.7
167.5°	3444.1	3428.8	3436.6	3454.2	3431.5
170°	3466.8	3451.6	3456.6	3474.3	3451.6
172.5°	3481.8	3466.8	3472.0	3489.6	3466.8
175°	3494.4	3476.7	3481.8	3499.5	3474.3
177.5°	3499.5	3481.8	3484.5	3502.2	3479.5
180°	3487.0	3487.0	3487.0	3487.0	3487.0

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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	10.38	11.23	11.36	12.21	13.52	9.94	10.78	10.91	11.77	13.07
	3H	12.05	12.80	13.03	13.80	15.12	11.56	12.31	12.54	13.31	14.63
	4H	12.64	13.35	13.64	14.35	15.68	12.14	12.86	13.14	13.86	15.19
	6H	13.04	13.70	14.05	14.70	16.05	12.54	13.20	13.55	14.20	15.55
	8H	13.14	13.77	14.16	14.80	16.14	12.64	13.27	13.66	14.29	15.63
	12H	13.19	13.79	14.22	14.81	16.17	12.68	13.28	13.71	14.30	15.66
4H	2H	10.84	11.56	11.85	12.56	13.89	10.49	11.20	11.49	12.20	13.54
	3H	12.71	13.31	13.73	14.34	15.68	12.30	12.90	13.32	13.93	15.28
	4H	13.43	13.98	14.45	15.00	16.37	13.00	13.55	14.03	14.57	15.94
	6H	13.95	14.42	14.98	15.46	16.83	13.51	13.99	14.55	15.03	16.40
	8H	14.10	14.54	15.13	15.58	16.96	13.66	14.10	14.70	15.14	16.52
	12H	14.17	14.57	15.23	15.62	17.01	13.72	14.12	14.78	15.17	16.56
8H	4H	13.62	14.06	14.66	15.10	16.48	13.25	13.69	14.28	14.73	16.11
	6H	14.26	14.62	15.32	15.70	17.08	13.88	14.24	14.93	15.32	16.70
	8H	14.48	14.80	15.55	15.87	17.26	14.09	14.41	15.16	15.48	16.87
	12H	14.62	14.90	15.69	15.96	17.40	14.21	14.49	15.28	15.55	16.98
12H	4H	13.61	14.01	14.66	15.06	16.44	13.24	13.64	14.29	14.69	16.08
	6H	14.29	14.61	15.35	15.67	17.07	13.92	14.24	14.98	15.30	16.70
	8H	14.53	14.81	15.60	15.88	17.31	14.15	14.43	15.22	15.50	16.93

END OF REPORT