

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: P904212

Luminaire Tested: DFN2DIP-SQ4F0-140D120US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904212
REPORT IS A COMBINATION OF REPORTS P900181 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D120US830-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

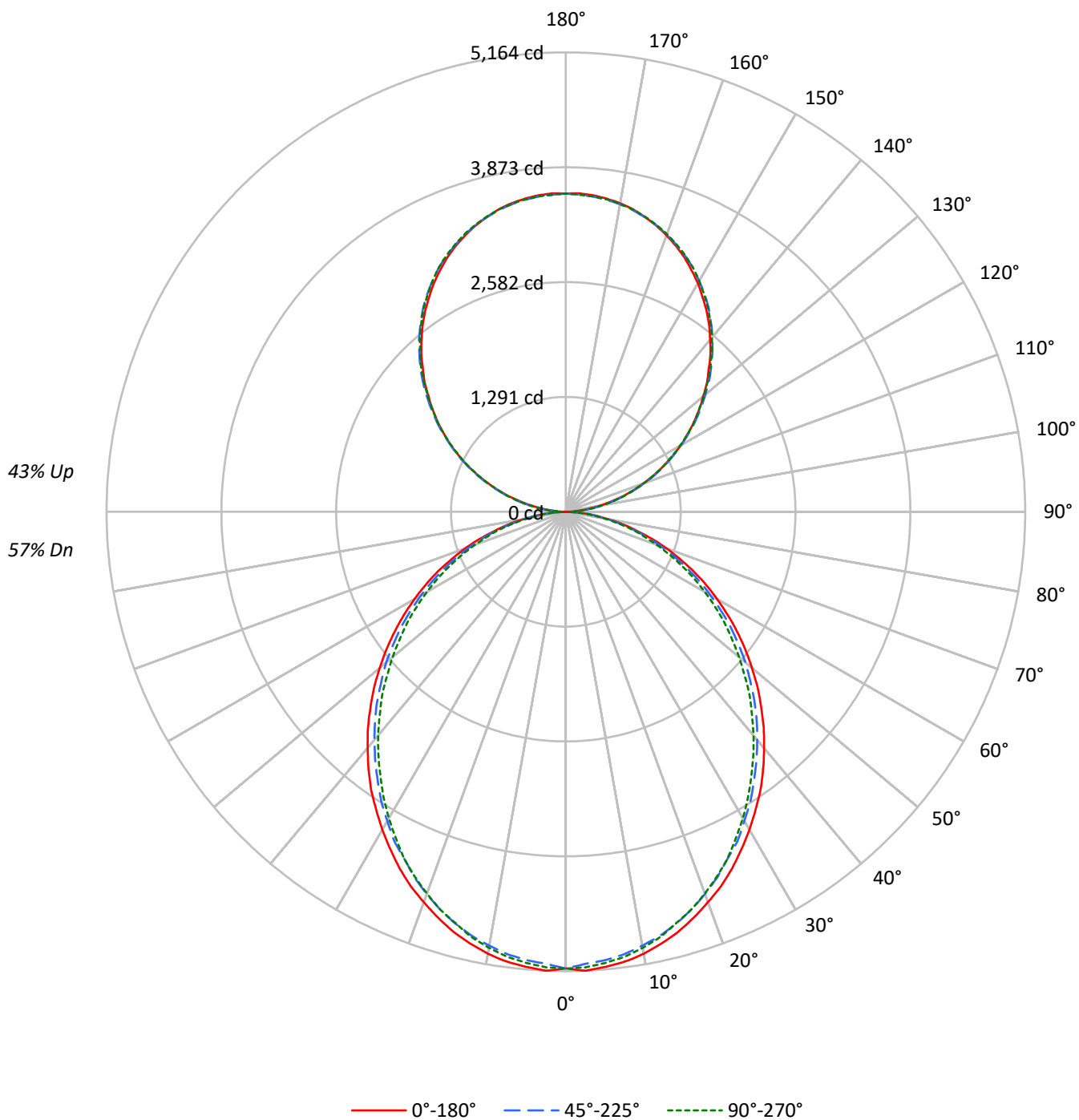
Lumens per Lamp: N/A
Luminaire Lumens: 23073.4 lumens
Efficiency: N/A
Efficacy: 98.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 233.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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	74	74	74	62	62	62
1	99	95	91	87	92	88	85	82	76	74	72	65	63	62	55	54	53
2	90	83	77	71	84	77	72	67	67	63	59	57	54	52	48	46	44
3	82	73	65	60	76	68	62	56	59	54	50	51	47	44	43	40	38
4	75	65	57	50	70	60	53	48	53	47	43	45	41	37	38	35	33
5	69	58	49	43	64	54	47	41	47	41	37	41	36	32	35	31	28
6	64	52	43	38	59	48	41	36	42	36	32	37	32	28	31	28	25
7	59	47	39	33	55	44	37	31	38	33	28	33	29	25	29	25	22
8	55	42	35	29	51	40	33	28	35	29	25	31	26	23	26	23	20
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	24	21	18
10	48	36	28	23	45	34	27	22	30	24	20	26	22	18	23	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3603	3603	3603
5°	3608	3553	3578
10°	3579	3506	3530
15°	3526	3449	3455
20°	3455	3370	3379
25°	3385	3274	3290
30°	3296	3186	3177
35°	3212	3081	3058
40°	3108	2976	2944
45°	3005	2870	2828
50°	2892	2759	2694
55°	2774	2631	2570
60°	2641	2478	2429
65°	2495	2321	2262
70°	2310	2128	2083
75°	2052	1899	1919
80°	1744	1606	1603
85°	1260	1098	1078

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3005 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	483.3	2.1
10°-20°	1359.7	5.9
20°-30°	1998.2	8.7
30°-40°	2320.8	10.1
40°-50°	2318.0	10.0
50°-60°	2021.2	8.8
60°-70°	1494.1	6.5
70°-80°	845.3	3.7
80°-90°	233.3	1.0
90°-100°	221.3	1.0
100°-110°	703.3	3.0
110°-120°	1203.6	5.2
120°-130°	1582.9	6.9
130°-140°	1776.7	7.7
140°-150°	1742.3	7.6
150°-160°	1461.5	6.3
160°-170°	969.3	4.2
170°-180°	338.8	1.5
0°-30°	3841.2	16.6
0°-40°	6162.0	26.7
0°-60°	10501.1	45.5
0°-90°	13073.8	56.7
90°-120°	2128.2	9.2
90°-150°	7230.1	31.3
90°-180°	10000.0	43.3
0°-180°	23073.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5134	5134	5134	5134	5134	
5°	5134	5115	5061	5100	5090	487
15°	4888	4858	4794	4814	4789	1377
25°	4424	4384	4300	4310	4300	2036
35°	3816	3767	3688	3658	3634	2383
45°	3106	3071	2997	2943	2923	2397
55°	2350	2320	2261	2202	2178	2101
65°	1585	1555	1506	1461	1437	1567
75°	829	820	795	765	775	885
85°	202	198	193	178	173	226
90°	3	39	106	99	102	22
95°	157	188	193	193	188	175
105°	649	658	664	670	670	685
115°	1208	1225	1220	1216	1208	1195
125°	1757	1784	1775	1765	1762	1570
135°	2272	2306	2312	2309	2300	1756
145°	2758	2780	2797	2801	2789	1724
155°	3154	3163	3173	3188	3178	1452
165°	3432	3428	3428	3450	3435	968
175°	3571	3562	3556	3577	3559	339
180°	3577	3577	3577	3577	3577	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5134.5	5134.5	5134.5	5134.5	5134.5
2.5°	5164.3	5139.7	5085.2	5134.5	5125.1
5°	5134.5	5115.1	5060.6	5099.9	5090.5
7.5°	5099.9	5070.6	5016.1	5055.9	5045.9
10°	5045.9	5011.4	4952.2	4991.5	4976.8
12.5°	4971.5	4942.2	4883.0	4907.6	4897.7
15°	4887.7	4858.4	4794.0	4813.9	4789.2
17.5°	4784.1	4754.7	4690.3	4714.9	4690.3
20°	4670.4	4641.1	4571.9	4586.6	4567.2
22.5°	4557.2	4512.7	4448.2	4448.2	4438.3
25°	4423.6	4384.3	4300.5	4310.0	4300.5
27.5°	4275.4	4240.9	4177.0	4162.3	4137.7
30°	4127.7	4087.9	4014.0	3999.4	3979.4
32.5°	3969.5	3940.2	3861.0	3831.2	3811.3
35°	3816.5	3767.3	3688.2	3658.4	3633.7
37.5°	3643.7	3599.2	3520.0	3485.5	3460.8
40°	3466.1	3426.3	3347.2	3303.2	3283.3
42.5°	3293.2	3253.5	3174.9	3125.1	3095.8
45°	3105.7	3071.2	2996.8	2942.8	2922.9
47.5°	2922.9	2888.3	2809.2	2754.8	2725.5
50°	2730.2	2705.6	2636.4	2567.2	2542.6
52.5°	2542.6	2508.0	2444.1	2389.6	2355.1
55°	2350.4	2320.5	2261.3	2202.2	2177.6
57.5°	2157.6	2133.0	2068.6	2009.4	1989.4
60°	1964.8	1945.5	1876.3	1821.8	1807.1
62.5°	1777.4	1742.8	1693.5	1644.3	1624.4
65°	1585.1	1555.2	1506.0	1461.4	1436.8
67.5°	1387.6	1362.4	1318.4	1283.8	1263.9
70°	1204.8	1184.9	1140.4	1105.8	1086.4
72.5°	1017.3	997.3	972.7	938.2	923.5
75°	829.2	819.8	794.7	765.3	775.2
77.5°	661.6	641.7	631.7	617.1	602.4
80°	494.0	488.7	478.8	464.1	454.1
82.5°	335.7	335.7	331.0	311.1	311.1
85°	202.2	197.5	192.7	177.6	172.9
87.5°	89.1	79.1	69.2	54.5	49.2
90°	3.2	38.8	105.7	99.2	102.5
92.5°	66.8	90.6	93.8	97.1	97.1
95°	157.4	187.7	193.0	193.0	187.7
97.5°	262.0	290.1	302.0	302.0	302.0
100°	382.9	407.6	416.2	416.2	413.0
102.5°	510.1	528.4	540.3	543.6	540.3
105°	649.2	657.8	664.3	669.7	669.7
107.5°	787.2	800.2	800.2	802.3	787.2
110°	921.0	938.2	938.2	938.2	929.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1065.4	1083.8	1080.5	1072.0	1065.4
115°	1207.8	1225.1	1219.6	1216.4	1207.8
117.5°	1349.1	1372.8	1357.7	1349.1	1340.5
120°	1491.5	1515.1	1491.5	1491.5	1481.8
122.5°	1620.9	1651.1	1636.0	1627.3	1620.9
125°	1756.7	1783.7	1775.1	1765.4	1762.1
127.5°	1889.4	1922.8	1910.9	1898.0	1889.4
130°	2013.4	2052.2	2046.8	2040.3	2028.4
132.5°	2152.5	2182.7	2184.8	2169.7	2161.2
135°	2272.2	2305.6	2312.2	2308.9	2300.3
137.5°	2405.9	2432.9	2438.3	2436.1	2423.2
140°	2523.5	2550.4	2565.5	2565.5	2553.6
142.5°	2644.3	2671.3	2679.8	2683.0	2671.3
145°	2758.5	2780.1	2797.4	2800.7	2788.8
147.5°	2861.0	2887.9	2901.0	2906.3	2894.5
150°	2966.7	2985.0	2996.9	3006.6	2996.9
152.5°	3060.5	3078.8	3094.0	3105.9	3094.0
155°	3154.3	3163.0	3172.7	3187.8	3178.1
157.5°	3235.3	3241.7	3247.1	3268.6	3253.6
160°	3307.5	3314.0	3317.2	3335.6	3322.6
162.5°	3374.3	3374.3	3377.6	3398.1	3383.0
165°	3431.5	3428.3	3428.3	3449.8	3434.7
167.5°	3483.3	3473.6	3473.6	3495.1	3480.1
170°	3522.1	3513.4	3510.2	3531.8	3513.4
172.5°	3549.0	3540.4	3537.2	3558.8	3540.4
175°	3570.6	3562.0	3555.6	3577.0	3558.8
177.5°	3582.5	3573.8	3567.3	3585.7	3567.3
180°	3577.0	3577.0	3577.0	3577.0	3577.0

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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	12.33	13.25	13.23	14.17	15.34	11.89	12.81	12.78	13.73	14.90
	3H	14.00	14.83	14.91	15.76	16.95	13.51	14.34	14.42	15.27	16.46
	4H	14.59	15.38	15.52	16.31	17.52	14.10	14.88	15.02	15.82	17.02
	6H	15.00	15.72	15.94	16.66	17.88	14.50	15.22	15.44	16.16	17.38
	8H	15.11	15.80	16.05	16.75	17.97	14.61	15.29	15.55	16.25	17.47
	12H	15.16	15.82	16.11	16.77	18.01	14.65	15.31	15.60	16.26	17.50
4H	2H	12.80	13.58	13.73	14.52	15.72	12.44	13.23	13.37	14.16	15.37
	3H	14.68	15.33	15.62	16.29	17.51	14.27	14.92	15.21	15.89	17.11
	4H	15.40	15.99	16.35	16.95	18.20	14.97	15.57	15.92	16.53	17.77
	6H	15.92	16.43	16.88	17.42	18.66	15.49	16.00	16.45	16.98	18.23
	8H	16.07	16.55	17.04	17.53	18.79	15.63	16.12	16.60	17.09	18.35
	12H	16.15	16.59	17.14	17.58	18.84	15.70	16.14	16.69	17.13	18.39
8H	4H	15.60	16.08	16.56	17.05	18.31	15.22	15.70	16.19	16.68	17.94
	6H	16.24	16.64	17.23	17.65	18.91	15.85	16.25	16.84	17.27	18.53
	8H	16.46	16.81	17.46	17.82	19.09	16.07	16.42	17.07	17.42	18.70
	12H	16.60	16.91	17.60	17.91	19.23	16.19	16.50	17.19	17.50	18.82
12H	4H	15.59	16.02	16.57	17.01	18.28	15.22	15.65	16.20	16.65	17.91
	6H	16.27	16.62	17.27	17.62	18.90	15.90	16.25	16.90	17.25	18.53
	8H	16.52	16.83	17.52	17.82	19.15	16.14	16.45	17.14	17.44	18.77