

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: P909701

Luminaire Tested: DFN2DIP-SQ4F0-160D110US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909701
REPORT IS A COMBINATION OF REPORTS P901685 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US840-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

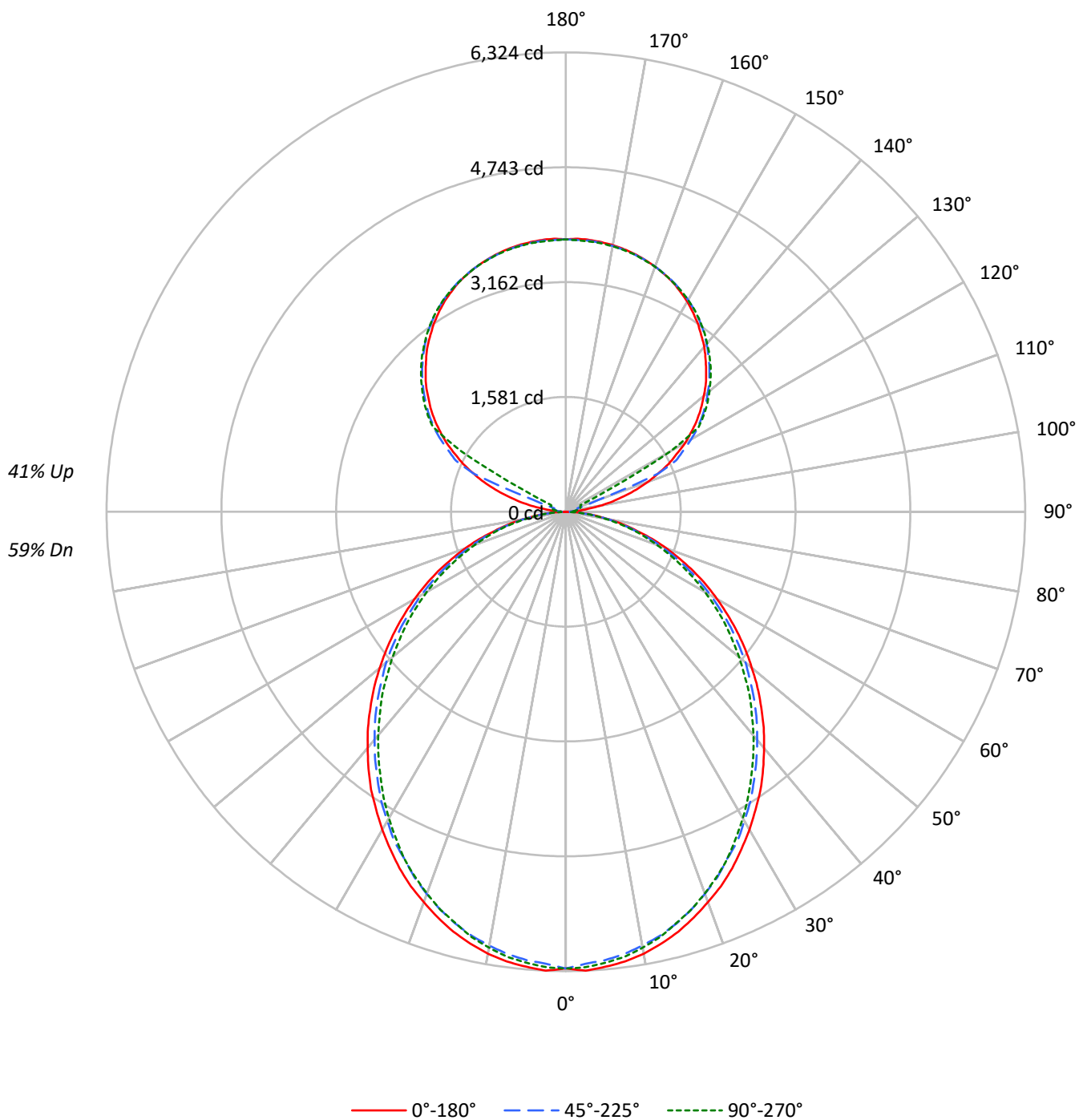
Lumens per Lamp: N/A
Luminaire Lumens: 26993.6 lumens
Efficiency: N/A
Efficacy: 108.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 249.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	102	102	102	102	88	88	88	76	76	76	65	65	65
1	100	95	92	88	93	89	86	83	78	75	73	67	65	63	57	56	55
2	91	83	77	72	85	78	73	68	68	64	60	59	56	53	50	48	46
3	83	73	66	60	77	69	62	57	60	55	51	52	48	45	45	42	39
4	76	65	57	51	71	61	54	48	53	48	43	46	42	38	40	37	34
5	70	58	50	44	65	54	47	41	48	42	37	42	37	33	36	32	29
6	64	52	44	38	60	49	42	36	43	37	33	38	33	29	33	29	26
7	60	47	39	33	55	44	37	32	39	33	29	34	30	26	30	26	23
8	55	43	35	30	52	40	33	28	36	30	26	31	27	23	27	24	21
9	52	39	32	26	48	37	30	25	33	27	23	29	24	21	25	22	19
10	48	36	29	24	45	34	27	23	30	25	21	27	22	19	24	20	17

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4412	4412	4412
5°	4418	4351	4381
10°	4383	4293	4323
15°	4318	4223	4231
20°	4231	4126	4137
25°	4144	4009	4029
30°	4036	3901	3891
35°	3933	3773	3744
40°	3806	3644	3605
45°	3680	3514	3463
50°	3542	3379	3298
55°	3397	3221	3147
60°	3233	3034	2974
65°	3055	2842	2770
70°	2828	2606	2550
75°	2513	2325	2350
80°	2135	1966	1963
85°	1543	1345	1319

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3680 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	591.7	2.2
10°-20°	1664.9	6.2
20°-30°	2446.8	9.1
30°-40°	2841.8	10.5
40°-50°	2838.3	10.5
50°-60°	2474.9	9.2
60°-70°	1829.5	6.8
70°-80°	1035.1	3.8
80°-90°	279.8	1.0
90°-100°	123.6	0.5
100°-110°	460.8	1.7
110°-120°	1222.2	4.5
120°-130°	2027.1	7.5
130°-140°	2153.3	8.0
140°-150°	2001.2	7.4
150°-160°	1608.9	6.0
160°-170°	1036.7	3.8
170°-180°	356.8	1.3
0°-30°	4703.5	17.4
0°-40°	7545.3	28.0
0°-60°	12858.5	47.6
0°-90°	16002.8	59.3
90°-120°	1806.7	6.7
90°-150°	7988.3	29.6
90°-180°	10991.0	40.7
0°-180°	26993.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6287	6287	6287	6287	6287	
5°	6287	6263	6197	6245	6233	597
15°	5985	5949	5870	5895	5864	1686
25°	5417	5369	5266	5278	5266	2492
35°	4673	4613	4516	4480	4450	2918
45°	3803	3760	3670	3603	3579	2935
55°	2878	2842	2769	2696	2666	2573
65°	1941	1904	1844	1790	1759	1919
75°	1015	1004	973	937	949	1084
85°	248	242	236	217	212	276
90°	3	32	54	68	73	25
95°	176	87	106	120	117	209
105°	825	906	166	195	206	881
115°	1560	1606	1674	418	223	1536
125°	2205	2241	2292	2311	2319	1967
135°	2729	2773	2797	2824	2819	2108
145°	3166	3163	3209	3228	3215	1980
155°	3486	3462	3494	3510	3489	1606
165°	3673	3657	3665	3684	3665	1038
175°	3757	3738	3744	3763	3736	358
180°	3749	3749	3749	3749	3749	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6287.1	6287.1	6287.1	6287.1	6287.1
2.5°	6323.7	6293.5	6226.8	6287.1	6275.5
5°	6287.1	6263.4	6196.6	6244.8	6233.2
7.5°	6244.8	6208.9	6142.1	6190.9	6178.7
10°	6178.7	6136.3	6063.9	6112.0	6094.0
12.5°	6087.7	6051.7	5979.2	6009.4	5997.2
15°	5985.0	5949.1	5870.1	5894.6	5864.4
17.5°	5858.0	5822.1	5743.2	5773.3	5743.2
20°	5718.8	5682.9	5598.2	5616.2	5592.4
22.5°	5580.3	5525.8	5446.8	5446.8	5434.7
25°	5416.7	5368.6	5265.9	5277.6	5265.9
27.5°	5235.1	5192.8	5114.6	5096.7	5066.5
30°	5054.3	5005.6	4915.1	4897.1	4872.8
32.5°	4860.6	4824.7	4727.8	4691.2	4666.9
35°	4673.4	4613.1	4516.1	4479.6	4449.5
37.5°	4461.7	4407.2	4310.3	4267.9	4237.8
40°	4244.2	4195.5	4098.6	4044.7	4020.4
42.5°	4032.6	3983.8	3887.6	3826.7	3790.7
45°	3803.0	3760.5	3669.5	3603.4	3579.1
47.5°	3579.1	3536.8	3439.9	3373.2	3337.3
50°	3343.1	3312.9	3228.2	3143.5	3113.4
52.5°	3113.4	3071.1	2992.8	2926.1	2883.8
55°	2878.0	2841.5	2769.0	2696.4	2666.3
57.5°	2642.0	2611.8	2532.9	2460.4	2436.1
60°	2405.9	2382.2	2297.5	2230.8	2212.8
62.5°	2176.3	2133.9	2073.7	2013.4	1989.0
65°	1940.9	1904.3	1844.0	1789.6	1759.4
67.5°	1699.1	1668.3	1614.5	1572.1	1547.7
70°	1475.2	1450.9	1396.3	1354.0	1330.3
72.5°	1245.6	1221.2	1191.1	1148.7	1130.8
75°	1015.3	1003.8	973.0	937.1	949.3
77.5°	810.1	785.8	773.6	755.6	737.6
80°	604.8	598.4	586.2	568.3	556.1
82.5°	411.1	411.1	405.4	381.0	381.0
85°	247.6	241.8	236.0	217.4	211.7
87.5°	109.1	96.8	84.6	66.8	60.3
90°	2.6	32.5	54.1	68.0	73.1
92.5°	68.0	57.1	65.0	70.6	73.1
95°	176.2	86.6	105.6	119.5	116.6
97.5°	317.3	95.0	138.1	146.5	149.2
100°	480.3	108.6	154.6	176.2	181.7
102.5°	659.0	653.9	160.1	189.8	198.1
105°	824.7	906.2	165.6	195.2	206.2
107.5°	1017.3	1084.9	171.1	200.7	211.7
110°	1201.8	1258.6	474.8	203.6	214.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1375.5	1424.1	1378.1	208.7	217.1
115°	1559.7	1605.8	1673.9	417.8	222.6
117.5°	1719.9	1774.0	1820.4	1432.2	721.5
120°	1899.0	1939.5	1988.5	2021.0	1654.8
122.5°	2050.7	2094.2	2148.6	2164.7	2167.7
125°	2205.3	2240.8	2292.3	2311.3	2319.4
127.5°	2346.4	2384.4	2425.3	2452.4	2455.0
130°	2479.4	2522.9	2552.5	2582.5	2580.0
132.5°	2615.0	2650.5	2680.2	2704.6	2702.1
135°	2729.2	2772.6	2796.7	2824.2	2818.6
137.5°	2848.3	2880.8	2908.2	2935.3	2927.2
140°	2965.0	2986.8	3016.5	3040.9	3027.4
142.5°	3062.8	3081.8	3116.9	3138.6	3125.0
145°	3165.9	3163.0	3209.0	3228.1	3214.6
147.5°	3255.2	3247.1	3293.2	3306.7	3296.1
150°	3342.2	3323.2	3366.6	3382.7	3369.2
152.5°	3415.3	3393.7	3434.2	3450.7	3431.7
155°	3485.9	3461.6	3494.1	3510.3	3488.7
157.5°	3542.8	3521.2	3545.7	3564.7	3542.8
160°	3591.8	3575.3	3591.8	3607.8	3588.9
162.5°	3634.9	3618.9	3632.4	3651.4	3626.9
165°	3673.0	3656.8	3664.9	3683.9	3664.9
167.5°	3702.9	3686.5	3694.9	3713.9	3689.4
170°	3727.4	3711.0	3716.4	3735.5	3711.0
172.5°	3743.5	3727.4	3732.9	3751.9	3727.4
175°	3757.0	3738.0	3743.5	3762.6	3735.5
177.5°	3762.6	3743.5	3746.4	3765.4	3740.9
180°	3749.0	3749.0	3749.0	3749.0	3749.0

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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	13.26	14.21	14.13	15.10	16.23	12.81	13.76	13.68	14.66	15.79
	3H	14.93	15.78	15.81	16.69	17.84	14.44	15.29	15.32	16.19	17.35
	4H	15.52	16.33	16.42	17.24	18.41	15.03	15.84	15.93	16.74	17.91
	6H	15.93	16.67	16.84	17.59	18.77	15.43	16.17	16.34	17.09	18.27
	8H	16.04	16.75	16.96	17.68	18.86	15.54	16.25	16.46	17.18	18.36
	12H	16.09	16.77	17.02	17.70	18.90	15.58	16.26	16.51	17.19	18.39
4H	2H	13.73	14.54	14.63	15.45	16.61	13.37	14.18	14.28	15.09	16.26
	3H	15.61	16.28	16.52	17.22	18.40	15.20	15.87	16.12	16.81	18.00
	4H	16.33	16.94	17.26	17.88	19.09	15.91	16.52	16.83	17.46	18.66
	6H	16.85	17.38	17.79	18.34	19.55	16.42	16.95	17.36	17.91	19.12
	8H	17.01	17.50	17.95	18.46	19.68	16.57	17.07	17.51	18.02	19.24
	12H	17.09	17.53	18.05	18.51	19.73	16.64	17.08	17.60	18.06	19.28
8H	4H	16.53	17.03	17.48	17.98	19.21	16.16	16.65	17.10	17.61	18.83
	6H	17.17	17.58	18.14	18.58	19.80	16.79	17.20	17.76	18.20	19.42
	8H	17.40	17.76	18.38	18.75	19.98	17.00	17.37	17.98	18.35	19.59
	12H	17.54	17.86	18.52	18.83	20.12	17.13	17.44	18.11	18.42	19.71
12H	4H	16.52	16.97	17.49	17.94	19.17	16.16	16.60	17.12	17.57	18.80
	6H	17.20	17.57	18.18	18.55	19.79	16.83	17.20	17.81	18.18	19.42
	8H	17.45	17.77	18.44	18.75	20.04	17.07	17.39	18.06	18.37	19.66