

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: P906974

Luminaire Tested: DFN2DIP-SQ4F0-160D110US835-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906974
REPORT IS A COMBINATION OF REPORTS P900166 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US835-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

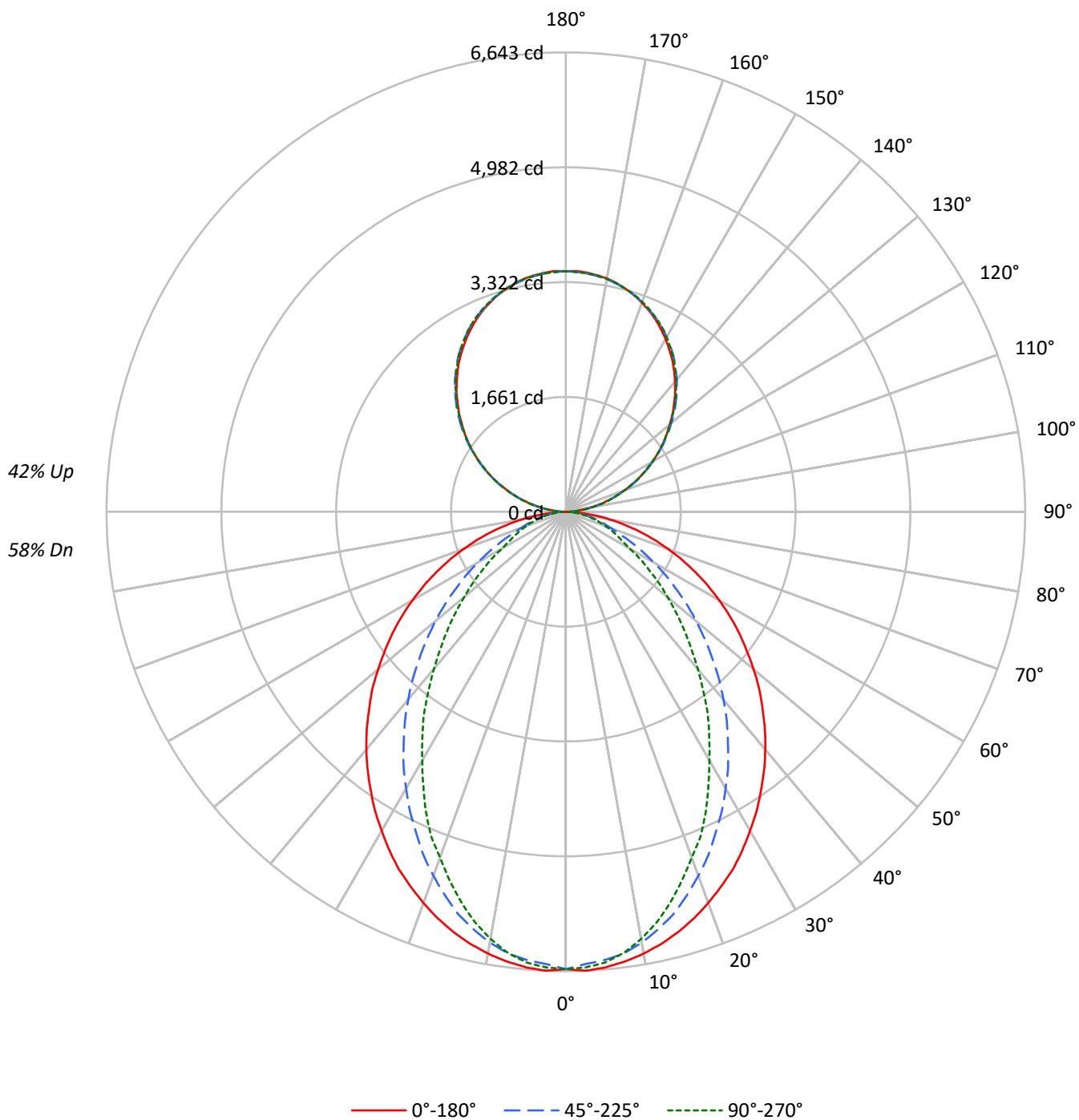
Lumens per Lamp: N/A
Luminaire Lumens: 23335.0 lumens
Efficiency: N/A
Efficacy: 93.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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	75	75	75	64	64	64
1	100	96	92	89	93	90	87	84	78	76	73	67	65	64	57	56	55
2	92	85	79	74	85	79	74	70	69	65	62	60	57	54	51	49	47
3	84	75	68	62	78	70	64	59	61	57	53	53	50	47	46	43	41
4	77	67	59	53	72	63	56	50	55	50	45	48	44	40	41	38	36
5	71	60	52	46	66	56	49	44	50	44	40	43	39	35	37	34	31
6	66	54	46	40	61	51	44	38	45	39	35	39	35	31	34	31	28
7	61	49	41	36	57	46	39	34	41	35	31	36	31	28	31	28	25
8	57	45	37	32	53	42	35	30	37	32	28	33	29	25	29	25	23
9	53	41	33	28	49	39	32	27	34	29	25	31	26	23	27	23	21
10	50	38	30	26	46	36	29	25	32	26	23	28	24	21	25	21	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4640	4640	4640
5°	4647	4567	4597
10°	4601	4479	4449
15°	4538	4331	4219
20°	4454	4128	3936
25°	4368	3900	3663
30°	4253	3667	3316
35°	4140	3415	3011
40°	4025	3155	2662
45°	3891	2866	2345
50°	3753	2574	2035
55°	3609	2262	1738
60°	3442	1936	1432
65°	3250	1605	1290
70°	3017	1295	1170
75°	2725	1144	1067
80°	2302	963	930
85°	1602	648	709

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3891 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	619.8	2.7
10°-20°	1701.4	7.3
20°-30°	2388.6	10.2
30°-40°	2603.8	11.2
40°-50°	2393.2	10.3
50°-60°	1879.5	8.1
60°-70°	1223.3	5.2
70°-80°	629.7	2.7
80°-90°	170.7	0.7
90°-100°	215.3	0.9
100°-110°	684.0	2.9
110°-120°	1170.5	5.0
120°-130°	1539.4	6.6
130°-140°	1727.9	7.4
140°-150°	1694.4	7.3
150°-160°	1421.4	6.1
160°-170°	942.6	4.0
170°-180°	329.5	1.4
0°-30°	4709.8	20.2
0°-40°	7313.5	31.3
0°-60°	11586.2	49.7
0°-90°	13609.9	58.3
90°-120°	2069.8	8.9
90°-150°	7031.6	30.1
90°-180°	9725.0	41.7
0°-180°	23335.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6613	6613	6613	6613	6613	
5°	6613	6583	6505	6559	6541	627
15°	6290	6224	6020	5907	5847	1772
25°	5709	5518	5123	4878	4787	2626
35°	4919	4614	4088	3710	3578	3079
45°	4022	3620	2992	2567	2424	3106
55°	3058	2591	1945	1586	1472	2732
65°	2065	1580	1041	838	820	2047
75°	1101	682	479	437	431	1164
85°	257	131	114	114	114	295
90°	3	38	103	96	100	23
95°	153	182	188	188	182	170
105°	631	640	646	651	651	666
115°	1175	1191	1186	1183	1175	1162
125°	1708	1735	1726	1717	1714	1527
135°	2210	2242	2249	2246	2237	1708
145°	2683	2704	2721	2724	2712	1676
155°	3068	3076	3086	3100	3091	1412
165°	3337	3334	3334	3355	3340	941
175°	3473	3464	3458	3479	3461	330
180°	3479	3479	3479	3479	3479	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6612.8	6612.8	6612.8	6612.8	6612.8
2.5°	6642.6	6612.8	6546.7	6607.1	6595.0
5°	6612.8	6582.9	6504.8	6558.8	6541.0
7.5°	6558.8	6523.2	6439.4	6462.9	6433.1
10°	6487.1	6445.2	6325.8	6307.4	6271.8
12.5°	6397.5	6343.6	6181.7	6146.1	6080.1
15°	6289.6	6223.6	6020.4	5906.7	5847.0
17.5°	6163.9	6068.0	5816.6	5685.1	5589.3
20°	6020.4	5900.4	5601.3	5452.1	5320.1
22.5°	5864.8	5727.0	5379.7	5176.6	5087.0
25°	5709.3	5517.5	5122.6	4877.5	4787.4
27.5°	5523.9	5320.1	4883.2	4602.0	4464.2
30°	5326.4	5098.5	4619.7	4315.0	4153.1
32.5°	5134.7	4859.1	4368.9	4009.6	3859.7
35°	4919.4	4614.0	4087.7	3710.5	3578.5
37.5°	4709.9	4380.4	3824.2	3410.8	3261.6
40°	4488.3	4129.6	3548.6	3123.8	2968.3
42.5°	4261.0	3878.1	3273.7	2830.5	2681.3
45°	4021.6	3620.4	2992.4	2567.0	2423.5
47.5°	3794.3	3369.6	2723.2	2297.8	2166.4
50°	3542.9	3118.1	2459.7	2046.4	1921.3
52.5°	3297.2	2848.3	2208.3	1813.4	1699.7
55°	3057.8	2591.1	1944.8	1586.0	1472.4
57.5°	2812.7	2334.0	1711.8	1376.5	1280.6
60°	2561.3	2082.6	1466.0	1161.3	1065.4
62.5°	2316.2	1837.5	1256.5	969.5	921.9
65°	2064.8	1579.7	1041.3	838.1	819.7
67.5°	1825.4	1340.3	838.1	735.9	718.1
70°	1574.0	1107.3	694.0	634.3	610.2
72.5°	1334.6	891.4	580.3	532.7	520.6
75°	1101.0	681.9	478.7	436.8	431.1
77.5°	867.9	484.4	377.1	353.0	341.0
80°	652.1	347.3	287.0	263.5	263.5
82.5°	454.6	233.7	197.5	185.4	185.4
85°	257.1	131.4	113.7	113.7	113.7
87.5°	95.9	47.6	47.6	41.9	41.9
90°	3.1	37.8	102.8	96.5	99.6
92.5°	65.0	88.1	91.2	94.4	94.4
95°	153.1	182.5	187.7	187.7	182.5
97.5°	254.9	282.1	293.7	293.7	293.7
100°	372.3	396.4	404.8	404.8	401.7
102.5°	496.1	513.9	525.5	528.6	525.5
105°	631.4	639.8	646.1	651.3	651.3
107.5°	765.6	778.2	778.2	780.3	765.6
110°	895.7	912.5	912.5	912.5	904.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1036.2	1054.0	1050.9	1042.5	1036.2
115°	1174.7	1191.4	1186.2	1183.1	1174.7
117.5°	1312.1	1335.1	1320.4	1312.1	1303.7
120°	1450.5	1473.6	1450.5	1450.5	1441.1
122.5°	1576.4	1605.7	1591.0	1582.6	1576.4
125°	1708.5	1734.7	1726.3	1716.9	1713.7
127.5°	1837.5	1870.0	1858.5	1845.9	1837.5
130°	1958.1	1995.9	1990.6	1984.3	1972.8
132.5°	2093.4	2122.8	2124.9	2110.2	2101.8
135°	2209.8	2242.3	2248.6	2245.5	2237.1
137.5°	2339.9	2366.1	2371.3	2369.2	2356.7
140°	2454.2	2480.4	2495.1	2495.1	2483.6
142.5°	2571.7	2597.9	2606.3	2609.4	2597.9
145°	2682.8	2703.8	2720.6	2723.7	2712.2
147.5°	2782.5	2808.7	2821.3	2826.5	2815.0
150°	2885.3	2903.1	2914.6	2924.1	2914.6
152.5°	2976.5	2994.3	3009.0	3020.6	3009.0
155°	3067.8	3076.1	3085.6	3100.3	3090.8
157.5°	3146.4	3152.7	3157.9	3178.9	3164.2
160°	3216.7	3223.0	3226.1	3244.0	3231.4
162.5°	3281.7	3281.7	3284.9	3304.8	3290.1
165°	3337.3	3334.1	3334.1	3355.1	3340.4
167.5°	3387.6	3378.2	3378.2	3399.2	3384.5
170°	3425.4	3417.0	3413.9	3434.8	3417.0
172.5°	3451.6	3443.2	3440.1	3461.1	3443.2
175°	3472.6	3464.2	3457.9	3478.9	3461.1
177.5°	3484.1	3475.7	3469.4	3487.3	3469.4
180°	3478.9	3478.9	3478.9	3478.9	3478.9

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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	13.23	14.14	14.12	15.04	16.19	9.19	10.10	10.08	11.00	12.15
	3H	14.92	15.73	15.82	16.64	17.82	10.39	11.20	11.29	12.11	13.29
	4H	15.54	16.30	16.45	17.22	18.40	10.84	11.61	11.76	12.53	13.71
	6H	15.97	16.67	16.89	17.59	18.79	11.17	11.87	12.10	12.80	14.00
	8H	16.10	16.76	17.03	17.71	18.90	11.26	11.93	12.20	12.87	14.07
	12H	16.16	16.80	17.10	17.73	18.96	11.31	11.94	12.25	12.88	14.10
4H	2H	13.26	14.02	14.18	14.94	16.13	9.80	10.56	10.72	11.48	12.67
	3H	15.10	15.74	16.03	16.69	17.89	11.16	11.79	12.09	12.74	13.94
	4H	15.80	16.38	16.74	17.32	18.55	11.71	12.29	12.65	13.23	14.46
	6H	16.32	16.82	17.28	17.79	19.01	12.14	12.63	13.09	13.60	14.83
	8H	16.50	16.97	17.46	17.93	19.17	12.27	12.73	13.22	13.69	14.93
	12H	16.60	17.02	17.58	18.00	19.25	12.33	12.75	13.31	13.73	14.98
8H	4H	15.77	16.24	16.73	17.20	18.44	12.00	12.46	12.96	13.43	14.66
	6H	16.35	16.73	17.33	17.73	18.97	12.52	12.90	13.50	13.91	15.15
	8H	16.57	16.91	17.56	17.90	19.15	12.71	13.05	13.71	14.05	15.30
	12H	16.71	17.01	17.71	18.00	19.30	12.84	13.13	13.83	14.12	15.42
12H	4H	15.73	16.15	16.71	17.13	18.37	12.01	12.43	12.98	13.41	14.65
	6H	16.32	16.66	17.31	17.66	18.91	12.57	12.91	13.56	13.90	15.16
	8H	16.55	16.85	17.54	17.83	19.14	12.79	13.08	13.78	14.07	15.37