

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: P920615

Luminaire Tested: DFN2DIP-SQ4F0-160D110US935-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920615
REPORT IS A COMBINATION OF REPORTS P901686 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US935-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

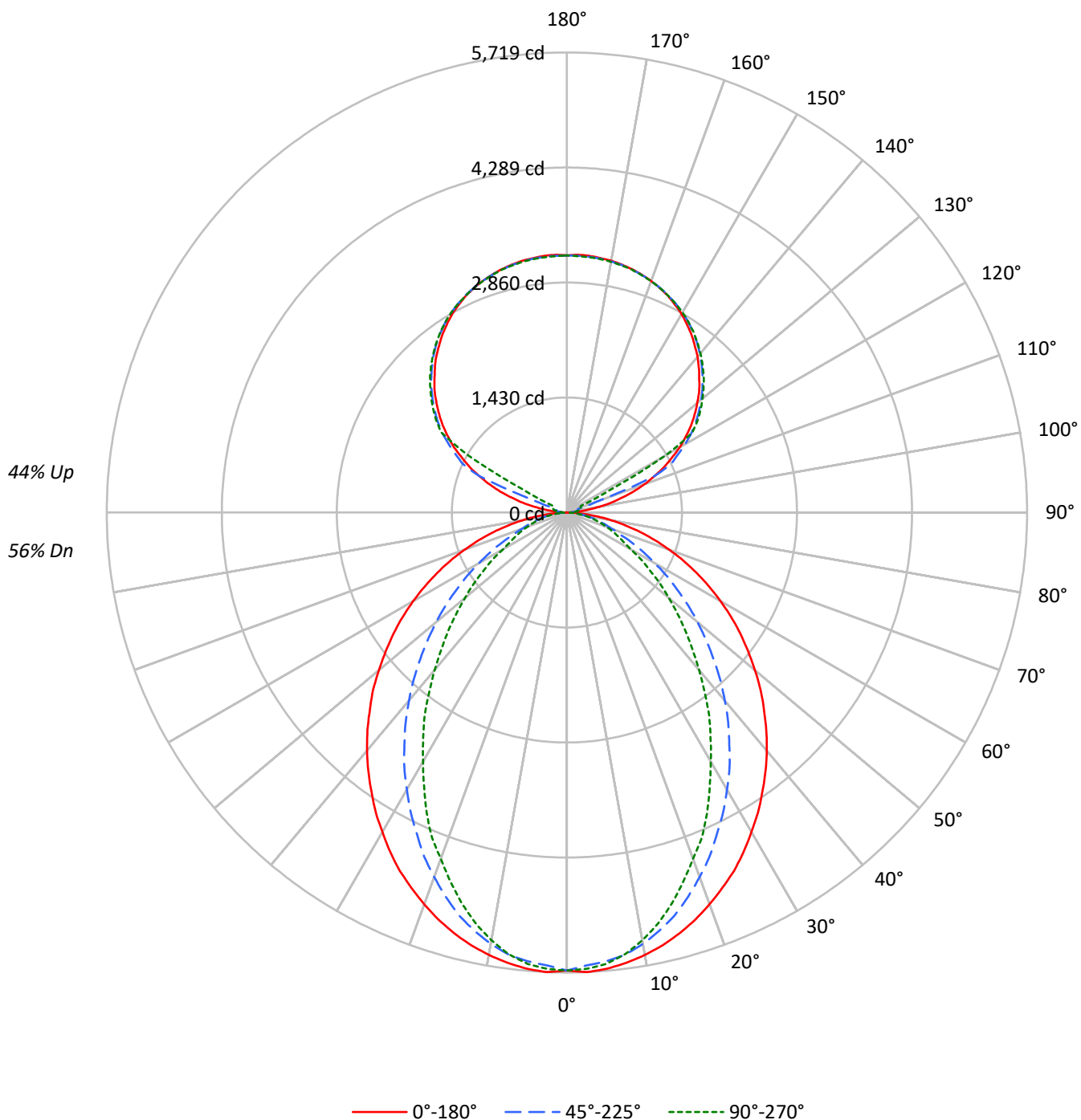
Lumens per Lamp: N/A
Luminaire Lumens: 21085.8 lumens
Efficiency: N/A
Efficacy: 84.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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
RCR																	
0	108	108	108	108	101	101	101	101	86	86	86		73	73	73		61
1	100	95	92	88	92	89	86	83	77	74	72		65	64	62		55
2	91	84	78	73	84	78	73	69	68	64	61		58	55	53		49
3	83	74	67	62	77	69	63	58	60	56	52		52	48	45		44
4	77	66	58	53	71	62	55	50	54	49	44		47	43	39		40
5	71	59	51	45	65	56	48	43	49	43	39		42	38	34		36
6	65	53	45	40	61	50	43	38	44	38	34		38	34	30		33
7	60	48	41	35	56	46	38	33	40	34	30		35	30	27		30
8	56	44	36	31	52	42	35	30	37	31	27		32	28	24		28
9	52	40	33	28	49	38	31	27	34	28	24		30	25	22		26
10	49	37	30	25	46	35	29	24	31	26	22		27	23	20		24

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3995	3995	3995
5°	4001	3932	3958
10°	3962	3856	3830
15°	3907	3729	3632
20°	3835	3554	3389
25°	3761	3358	3154
30°	3662	3157	2855
35°	3564	2940	2593
40°	3465	2716	2292
45°	3350	2468	2019
50°	3232	2216	1752
55°	3107	1948	1496
60°	2964	1667	1233
65°	2798	1382	1111
70°	2598	1115	1007
75°	2347	985	919
80°	1982	829	801
85°	1380	558	610

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3350 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	533.6	2.5
10°-20°	1464.9	6.9
20°-30°	2056.6	9.8
30°-40°	2241.8	10.6
40°-50°	2060.5	9.8
50°-60°	1618.2	7.7
60°-70°	1053.3	5.0
70°-80°	542.2	2.6
80°-90°	144.0	0.7
90°-100°	105.4	0.5
100°-110°	392.9	1.9
110°-120°	1042.0	4.9
120°-130°	1728.3	8.2
130°-140°	1835.9	8.7
140°-150°	1706.2	8.1
150°-160°	1371.8	6.5
160°-170°	883.9	4.2
170°-180°	304.2	1.4
0°-30°	4055.1	19.2
0°-40°	6296.9	29.9
0°-60°	9975.6	47.3
0°-90°	11715.2	55.6
90°-120°	1540.3	7.3
90°-150°	6810.7	32.3
90°-180°	9371.0	44.4
0°-180°	21085.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5694	5694	5694	5694	5694	
5°	5694	5668	5601	5647	5632	540
15°	5415	5358	5184	5086	5034	1526
25°	4916	4751	4410	4200	4122	2261
35°	4236	3973	3520	3195	3081	2651
45°	3463	3117	2576	2210	2087	2674
55°	2633	2231	1674	1366	1268	2353
65°	1778	1360	897	722	706	1762
75°	948	587	412	376	371	1003
85°	221	113	98	98	98	254
90°	2	28	46	58	62	20
95°	150	74	90	102	99	178
105°	703	773	141	166	176	751
115°	1330	1369	1427	356	190	1309
125°	1880	1910	1954	1971	1978	1677
135°	2327	2364	2384	2408	2403	1797
145°	2699	2697	2736	2752	2741	1688
155°	2972	2951	2979	2993	2974	1370
165°	3132	3118	3125	3141	3125	885
175°	3203	3187	3192	3208	3185	305
180°	3196	3196	3196	3196	3196	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5693.6	5693.6	5693.6	5693.6	5693.6
2.5°	5719.3	5693.6	5636.7	5688.7	5678.3
5°	5693.6	5667.9	5600.6	5647.1	5631.8
7.5°	5647.1	5616.5	5544.3	5564.5	5538.9
10°	5585.4	5549.3	5446.5	5430.7	5400.0
12.5°	5508.2	5461.8	5322.4	5291.8	5235.0
15°	5415.3	5358.5	5183.6	5085.7	5034.3
17.5°	5307.1	5224.5	5008.1	4894.9	4812.4
20°	5183.6	5080.2	4822.7	4694.2	4580.6
22.5°	5049.6	4930.9	4631.9	4457.0	4379.9
25°	4915.7	4750.6	4410.5	4199.5	4121.9
27.5°	4756.1	4580.6	4204.4	3962.3	3843.7
30°	4586.0	4389.8	3977.6	3715.2	3575.8
32.5°	4421.0	4183.7	3761.6	3452.3	3323.2
35°	4235.6	3972.6	3519.5	3194.7	3081.1
37.5°	4055.2	3771.5	3292.6	2936.7	2808.2
40°	3864.4	3555.6	3055.3	2689.6	2555.7
42.5°	3668.7	3339.0	2818.6	2437.1	2308.6
45°	3462.6	3117.2	2576.4	2210.2	2086.6
47.5°	3266.9	2901.2	2344.7	1978.4	1865.3
50°	3050.4	2684.7	2117.8	1761.9	1654.2
52.5°	2838.9	2452.4	1901.3	1561.3	1463.4
55°	2632.8	2230.9	1674.5	1365.5	1267.7
57.5°	2421.7	2009.6	1473.9	1185.2	1102.6
60°	2205.3	1793.1	1262.2	999.9	917.3
62.5°	1994.2	1582.1	1081.8	834.7	793.8
65°	1777.8	1360.1	896.6	721.6	705.8
67.5°	1571.7	1154.0	721.6	633.6	618.3
70°	1355.2	953.4	597.5	546.1	525.4
72.5°	1149.1	767.5	499.6	458.7	448.2
75°	948.0	587.1	412.2	376.1	371.2
77.5°	747.3	417.1	324.7	303.9	293.6
80°	561.5	299.0	247.1	226.9	226.9
82.5°	391.4	201.2	170.0	159.6	159.6
85°	221.4	113.1	97.9	97.9	97.9
87.5°	82.6	41.0	41.0	36.1	36.1
90°	2.2	27.7	46.1	57.9	62.3
92.5°	57.9	48.6	55.4	60.2	62.3
95°	150.2	73.9	90.1	101.9	99.4
97.5°	270.5	81.0	117.8	124.9	127.2
100°	409.5	92.6	131.8	150.2	154.9
102.5°	561.9	557.5	136.5	161.8	168.9
105°	703.1	772.6	141.2	166.4	175.8
107.5°	867.4	925.0	145.9	171.1	180.5
110°	1024.7	1073.1	404.8	173.6	182.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1172.8	1214.2	1174.9	178.0	185.1
115°	1329.8	1369.1	1427.1	356.2	189.8
117.5°	1466.4	1512.5	1552.0	1221.1	615.2
120°	1619.0	1653.6	1695.4	1723.1	1410.8
122.5°	1748.4	1785.5	1831.9	1845.6	1848.1
125°	1880.2	1910.5	1954.4	1970.6	1977.5
127.5°	2000.5	2032.9	2067.8	2090.8	2093.1
130°	2113.9	2151.0	2176.3	2201.8	2199.7
132.5°	2229.6	2259.8	2285.1	2305.9	2303.8
135°	2326.8	2363.9	2384.4	2407.9	2403.1
137.5°	2428.4	2456.2	2479.5	2502.6	2495.7
140°	2527.9	2546.5	2571.8	2592.6	2581.1
142.5°	2611.3	2627.5	2657.5	2675.9	2664.4
145°	2699.2	2696.7	2736.0	2752.3	2740.7
147.5°	2775.3	2768.5	2807.7	2819.3	2810.2
150°	2849.5	2833.3	2870.3	2884.1	2872.5
152.5°	2911.8	2893.4	2928.0	2942.0	2925.8
155°	2972.0	2951.3	2979.1	2992.8	2974.4
157.5°	3020.6	3002.1	3023.0	3039.2	3020.6
160°	3062.3	3048.3	3062.3	3076.0	3059.8
162.5°	3099.1	3085.4	3096.9	3113.1	3092.3
165°	3131.5	3117.8	3124.6	3140.8	3124.6
167.5°	3157.0	3143.1	3150.2	3166.4	3145.6
170°	3177.9	3163.9	3168.6	3184.8	3163.9
172.5°	3191.6	3177.9	3182.6	3198.8	3177.9
175°	3203.2	3187.0	3191.6	3207.9	3184.8
177.5°	3207.9	3191.6	3194.1	3210.3	3189.5
180°	3196.4	3196.4	3196.4	3196.4	3196.4

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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	12.48	13.35	13.39	14.28	15.48	8.44	9.31	9.35	10.24	11.44
	3H	14.16	14.95	15.09	15.88	17.10	9.63	10.41	10.56	11.35	12.57
	4H	14.78	15.52	15.72	16.46	17.69	10.08	10.82	11.02	11.77	12.99
	6H	15.20	15.89	16.16	16.83	18.07	10.41	11.09	11.36	12.04	13.28
	8H	15.33	15.98	16.29	16.95	18.18	10.50	11.15	11.46	12.11	13.35
	12H	15.40	16.02	16.36	16.98	18.24	10.54	11.16	11.51	12.12	13.38
4H	2H	12.50	13.24	13.45	14.18	15.41	9.04	9.78	9.99	10.72	11.95
	3H	14.34	14.95	15.30	15.93	17.17	10.40	11.01	11.35	11.99	13.23
	4H	15.04	15.60	16.00	16.57	17.83	10.95	11.51	11.91	12.48	13.74
	6H	15.56	16.04	16.54	17.03	18.30	11.37	11.85	12.35	12.84	14.11
	8H	15.74	16.19	16.72	17.17	18.45	11.50	11.95	12.48	12.94	14.21
	12H	15.84	16.24	16.84	17.24	18.53	11.57	11.97	12.57	12.98	14.26
8H	4H	15.01	15.46	15.99	16.44	17.72	11.23	11.68	12.21	12.67	13.95
	6H	15.58	15.95	16.59	16.98	18.25	11.75	12.13	12.76	13.15	14.43
	8H	15.80	16.13	16.81	17.14	18.44	11.95	12.27	12.96	13.29	14.58
	12H	15.94	16.23	16.96	17.24	18.58	12.07	12.36	13.09	13.37	14.71
12H	4H	14.96	15.37	15.96	16.37	17.65	11.24	11.65	12.24	12.65	13.93
	6H	15.56	15.88	16.57	16.90	18.19	11.80	12.13	12.82	13.15	14.44
	8H	15.78	16.07	16.80	17.08	18.42	12.02	12.31	13.04	13.32	14.66

END OF REPORT