

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: P926071

Luminaire Tested: DFN2DIP-SQ4F0-160D110US950-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P926071
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-SQ4F0-160D110US950-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

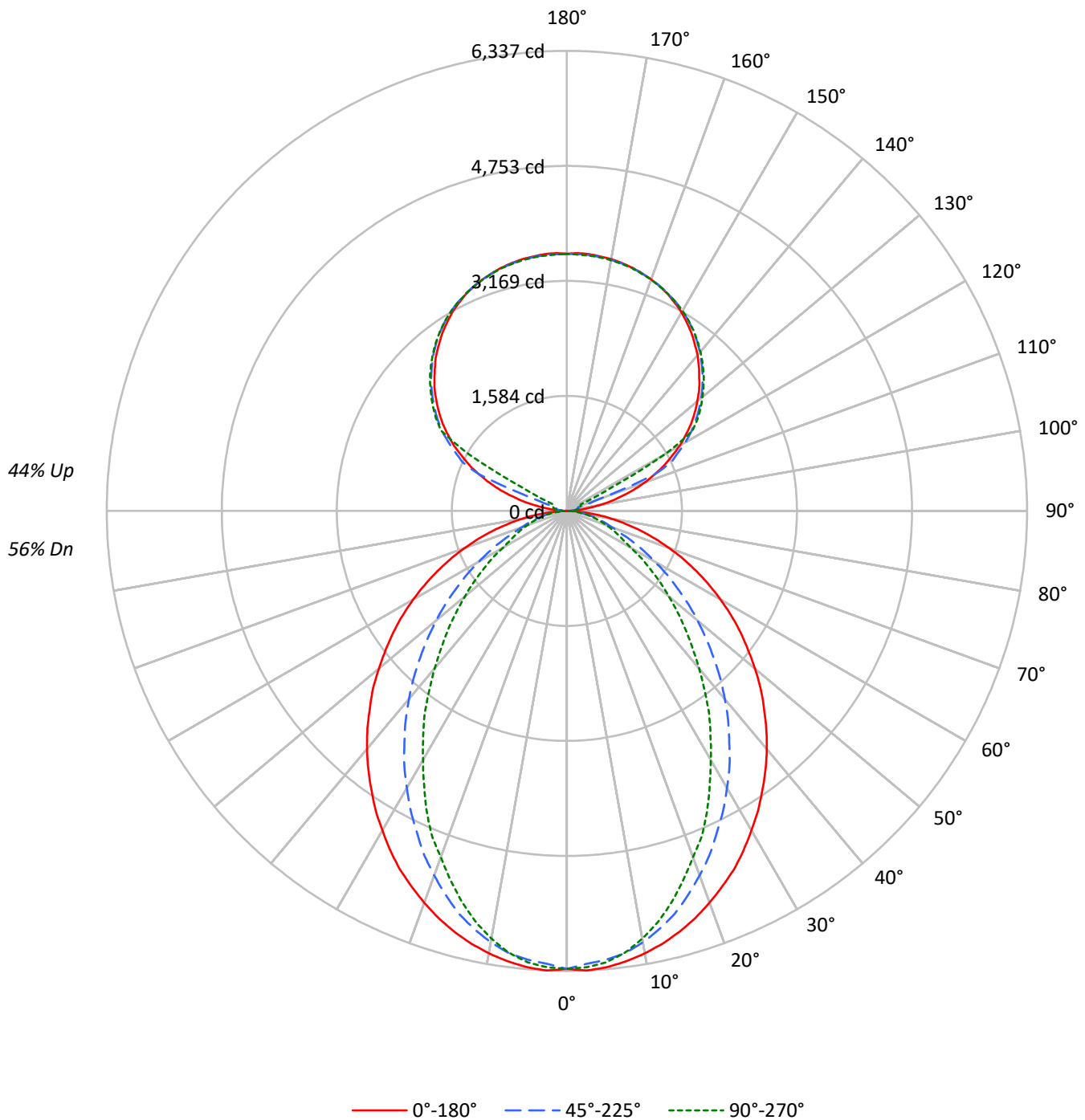
Lumens per Lamp: N/A
Luminaire Lumens: 23363.5 lumens
Efficiency: N/A
Efficacy: 93.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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	108	108	108	108	101	101	101	101	86	86	86	73	73	73	61	61	61
1	100	95	92	88	92	89	86	83	77	74	72	65	64	62	55	54	53
2	91	84	78	73	84	78	73	69	68	64	61	58	55	53	49	47	45
3	83	74	67	62	77	69	63	58	60	56	52	52	48	45	44	41	39
4	77	66	58	53	71	62	55	50	54	49	44	47	43	39	40	37	34
5	71	59	51	45	65	56	48	43	49	43	39	42	38	34	36	33	30
6	65	53	45	40	61	50	43	38	44	38	34	38	34	30	33	29	27
7	60	48	41	35	56	46	38	33	40	34	30	35	30	27	30	27	24
8	56	44	36	31	52	42	35	30	37	31	27	32	28	24	28	24	22
9	52	40	33	28	49	38	31	27	34	28	24	30	25	22	26	22	20
10	49	37	30	25	46	35	29	24	31	26	22	27	23	20	24	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4427	4427	4427
5°	4434	4357	4385
10°	4390	4273	4244
15°	4329	4132	4024
20°	4249	3938	3755
25°	4167	3721	3494
30°	4057	3498	3164
35°	3949	3258	2873
40°	3840	3010	2539
45°	3712	2734	2237
50°	3581	2456	1942
55°	3443	2158	1658
60°	3284	1847	1366
65°	3101	1531	1231
70°	2879	1236	1116
75°	2600	1091	1018
80°	2196	918	887
85°	1529	618	676

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3712 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	591.2	2.5
10°-20°	1623.1	6.9
20°-30°	2278.8	9.8
30°-40°	2484.0	10.6
40°-50°	2283.1	9.8
50°-60°	1793.0	7.7
60°-70°	1167.1	5.0
70°-80°	600.8	2.6
80°-90°	159.6	0.7
90°-100°	116.8	0.5
100°-110°	435.4	1.9
110°-120°	1154.6	4.9
120°-130°	1915.0	8.2
130°-140°	2034.2	8.7
140°-150°	1890.5	8.1
150°-160°	1519.9	6.5
160°-170°	979.4	4.2
170°-180°	337.1	1.4
0°-30°	4493.1	19.2
0°-40°	6977.1	29.9
0°-60°	11053.2	47.3
0°-90°	12980.6	55.6
90°-120°	1706.7	7.3
90°-150°	7546.4	32.3
90°-180°	10383.0	44.4
0°-180°	23363.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6309	6309	6309	6309	6309	
5°	6309	6280	6206	6257	6240	598
15°	6000	5937	5744	5635	5578	1691
25°	5447	5264	4887	4653	4567	2505
35°	4693	4402	3900	3540	3414	2937
45°	3837	3454	2855	2449	2312	2963
55°	2917	2472	1855	1513	1405	2607
65°	1970	1507	993	800	782	1953
75°	1050	650	457	417	411	1111
85°	245	125	108	108	108	282
90°	2	31	51	64	69	22
95°	166	82	100	113	110	197
105°	779	856	156	184	195	832
115°	1474	1517	1581	395	210	1451
125°	2083	2117	2166	2183	2191	1858
135°	2578	2619	2642	2668	2663	1992
145°	2991	2988	3032	3050	3037	1871
155°	3293	3270	3301	3316	3296	1517
165°	3470	3454	3462	3480	3462	980
175°	3549	3531	3536	3554	3529	338
180°	3542	3542	3542	3542	3542	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6308.6	6308.6	6308.6	6308.6	6308.6
2.5°	6337.0	6308.6	6245.6	6303.2	6291.6
5°	6308.6	6280.1	6205.6	6257.1	6240.1
7.5°	6257.1	6223.1	6143.2	6165.6	6137.2
10°	6188.7	6148.7	6034.8	6017.3	5983.3
12.5°	6103.2	6051.8	5897.3	5863.4	5800.4
15°	6000.3	5937.3	5743.5	5635.0	5578.0
17.5°	5880.4	5788.9	5549.0	5423.6	5332.2
20°	5743.5	5629.0	5343.6	5201.3	5075.4
22.5°	5595.0	5463.6	5132.2	4938.5	4853.0
25°	5446.7	5263.7	4887.0	4653.1	4567.2
27.5°	5269.8	5075.4	4658.6	4390.3	4258.8
30°	5081.4	4864.0	4407.2	4116.5	3962.1
32.5°	4898.5	4635.6	4167.9	3825.2	3682.2
35°	4693.1	4401.8	3899.7	3539.8	3413.9
37.5°	4493.2	4178.9	3648.3	3253.9	3111.6
40°	4281.8	3939.6	3385.4	2980.1	2831.8
42.5°	4065.0	3699.7	3123.1	2700.3	2558.0
45°	3836.6	3453.9	2854.7	2448.9	2312.0
47.5°	3619.8	3214.6	2597.9	2192.1	2066.7
50°	3379.9	2974.7	2346.6	1952.3	1832.9
52.5°	3145.5	2717.3	2106.7	1730.0	1621.5
55°	2917.1	2471.9	1855.3	1513.0	1404.7
57.5°	2683.3	2226.6	1633.1	1313.2	1221.7
60°	2443.5	1986.8	1398.6	1107.9	1016.4
62.5°	2209.7	1753.0	1198.7	924.9	879.5
65°	1969.8	1507.0	993.4	799.5	782.0
67.5°	1741.4	1278.6	799.5	702.0	685.1
70°	1501.6	1056.4	662.1	605.1	582.1
72.5°	1273.2	850.4	553.6	508.2	496.7
75°	1050.4	650.5	456.7	416.7	411.3
77.5°	828.0	462.1	359.8	336.8	325.3
80°	622.1	331.3	273.8	251.4	251.4
82.5°	433.7	222.9	188.4	176.9	176.9
85°	245.3	125.4	108.5	108.5	108.5
87.5°	91.5	45.4	45.4	40.0	40.0
90°	2.5	30.7	51.1	64.2	69.1
92.5°	64.2	53.9	61.4	66.7	69.1
95°	166.5	81.9	99.8	112.9	110.2
97.5°	299.7	89.8	130.5	138.4	140.9
100°	453.7	102.6	146.1	166.5	171.6
102.5°	622.6	617.7	151.2	179.3	187.2
105°	779.0	856.0	156.5	184.4	194.8
107.5°	961.1	1024.9	161.6	189.6	200.0
110°	1135.4	1189.0	448.6	192.3	202.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1299.4	1345.3	1301.8	197.2	205.1
115°	1473.5	1517.0	1581.3	394.7	210.3
117.5°	1624.8	1675.9	1719.7	1353.0	681.6
120°	1793.9	1832.3	1878.5	1909.2	1563.2
122.5°	1937.3	1978.3	2029.7	2045.0	2047.8
125°	2083.3	2116.8	2165.5	2183.4	2191.1
127.5°	2216.6	2252.5	2291.1	2316.7	2319.2
130°	2342.3	2383.4	2411.3	2439.7	2437.3
132.5°	2470.4	2503.9	2531.9	2555.0	2552.6
135°	2578.2	2619.2	2642.0	2668.0	2662.7
137.5°	2690.8	2721.5	2747.3	2772.9	2765.3
140°	2800.9	2821.6	2849.6	2872.7	2859.9
142.5°	2893.4	2911.3	2944.5	2964.9	2952.2
145°	2990.8	2988.0	3031.5	3049.6	3036.8
147.5°	3075.1	3067.5	3111.0	3123.8	3113.8
150°	3157.3	3139.3	3180.3	3195.6	3182.8
152.5°	3226.3	3205.9	3244.3	3259.8	3241.9
155°	3293.0	3270.1	3300.8	3316.1	3295.7
157.5°	3346.8	3326.4	3349.6	3367.5	3346.8
160°	3393.1	3377.5	3393.1	3408.3	3390.3
162.5°	3433.8	3418.7	3431.4	3449.4	3426.3
165°	3469.8	3454.5	3462.2	3480.1	3462.2
167.5°	3498.0	3482.6	3490.5	3508.4	3485.3
170°	3521.2	3505.7	3510.8	3528.8	3505.7
172.5°	3536.4	3521.2	3526.4	3544.3	3521.2
175°	3549.2	3531.2	3536.4	3554.4	3528.8
177.5°	3554.4	3536.4	3539.1	3557.1	3534.0
180°	3541.6	3541.6	3541.6	3541.6	3541.6

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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	12.83	13.71	13.75	14.64	15.83	8.79	9.67	9.71	10.60	11.79
	3H	14.52	15.30	15.45	16.24	17.46	9.99	10.77	10.91	11.71	12.93
	4H	15.13	15.87	16.07	16.82	18.04	10.44	11.18	11.38	12.12	13.35
	6H	15.56	16.24	16.51	17.19	18.43	10.76	11.45	11.72	12.39	13.63
	8H	15.69	16.34	16.65	17.30	18.54	10.86	11.50	11.82	12.47	13.71
	12H	15.75	16.37	16.72	17.33	18.59	10.90	11.52	11.87	12.48	13.74
4H	2H	12.86	13.60	13.80	14.54	15.77	9.40	10.14	10.34	11.08	12.31
	3H	14.69	15.31	15.65	16.28	17.52	10.75	11.37	11.71	12.34	13.58
	4H	15.39	15.95	16.36	16.92	18.19	11.30	11.86	12.27	12.83	14.10
	6H	15.91	16.40	16.89	17.39	18.65	11.73	12.21	12.70	13.20	14.46
	8H	16.09	16.54	17.07	17.53	18.81	11.86	12.31	12.84	13.29	14.57
	12H	16.19	16.60	17.19	17.60	18.88	11.92	12.33	12.92	13.33	14.61
8H	4H	15.36	15.81	16.34	16.80	18.08	11.59	12.04	12.57	13.02	14.30
	6H	15.94	16.31	16.94	17.34	18.61	12.11	12.48	13.12	13.51	14.79
	8H	16.16	16.48	17.17	17.50	18.79	12.30	12.63	13.32	13.65	14.94
	12H	16.30	16.59	17.32	17.60	18.94	12.42	12.71	13.44	13.72	15.06
12H	4H	15.32	15.72	16.32	16.73	18.01	11.60	12.00	12.60	13.00	14.29
	6H	15.91	16.24	16.93	17.25	18.55	12.16	12.49	13.18	13.50	14.80
	8H	16.14	16.43	17.15	17.43	18.77	12.38	12.66	13.39	13.67	15.01