

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: P920483

Luminaire Tested: DFN2DIP-SQ4F0-100D160US935-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920483
REPORT IS A COMBINATION OF REPORTS P901732 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-100D160US935-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

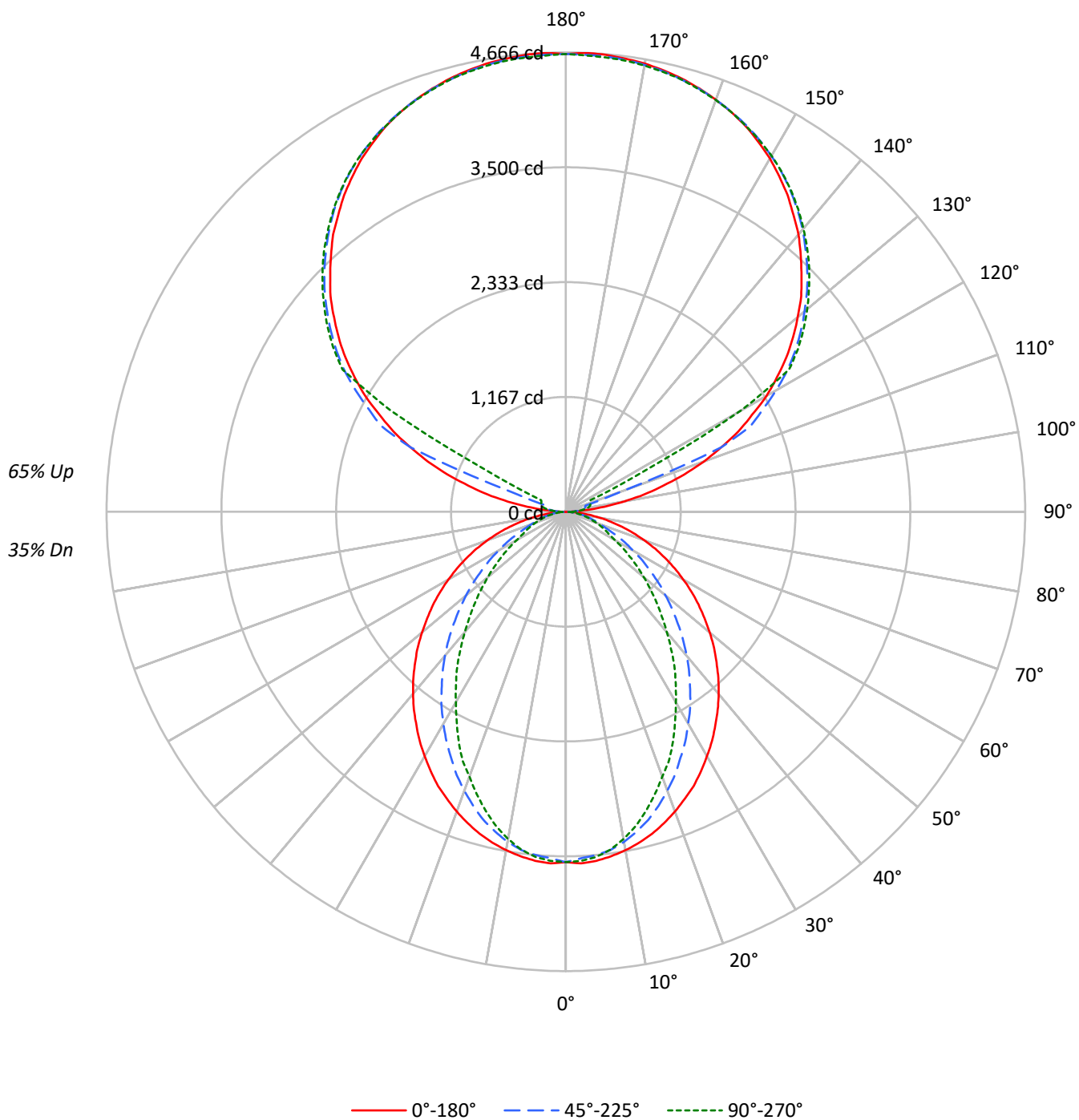
Lumens per Lamp: N/A
Luminaire Lumens: 20956.7 lumens
Efficiency: N/A
Efficacy: 97.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 214.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9968
Total Harmonic Distortion (THDi): 0.064
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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	42	42	42
1	95	91	87	84	86	82	79	76	66	64	62	51	50	49	38	37	36
2	87	80	74	69	78	72	67	63	58	55	52	46	43	41	34	32	31
3	79	70	63	58	71	64	58	53	52	47	44	41	38	35	30	28	27
4	72	62	55	49	65	57	50	45	46	41	38	36	33	30	27	25	23
5	67	56	48	42	60	51	44	39	41	36	33	33	29	27	25	22	21
6	61	50	42	37	55	45	39	34	37	32	29	30	26	23	22	20	18
7	57	45	37	32	51	41	34	30	34	29	25	27	23	21	21	18	16
8	53	41	33	28	48	37	31	26	31	26	22	25	21	19	19	17	15
9	49	37	30	25	44	34	28	23	28	23	20	23	19	17	18	15	13
10	46	34	27	23	41	31	25	21	26	21	18	21	18	15	16	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2497	2497	2497
5°	2501	2458	2474
10°	2476	2410	2394
15°	2442	2331	2270
20°	2397	2222	2118
25°	2351	2099	1971
30°	2289	1973	1784
35°	2228	1838	1620
40°	2166	1698	1432
45°	2094	1542	1262
50°	2020	1385	1095
55°	1942	1217	935
60°	1852	1042	770
65°	1749	863	694
70°	1624	697	630
75°	1467	615	574
80°	1239	518	501
85°	863	348	381

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2493 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	333.5	1.6
10°-20°	915.5	4.4
20°-30°	1285.4	6.1
30°-40°	1401.2	6.7
40°-50°	1287.8	6.1
50°-60°	1011.4	4.8
60°-70°	658.3	3.1
70°-80°	338.9	1.6
80°-90°	94.7	0.5
90°-100°	153.3	0.7
100°-110°	571.5	2.7
110°-120°	1515.7	7.2
120°-130°	2513.9	12.0
130°-140°	2670.3	12.7
140°-150°	2481.8	11.8
150°-160°	1995.3	9.5
160°-170°	1285.7	6.1
170°-180°	442.5	2.1
0°-30°	2534.4	12.1
0°-40°	3935.6	18.8
0°-60°	6234.8	29.8
0°-90°	7326.7	35.0
90°-120°	2240.5	10.7
90°-150°	9906.5	47.3
90°-180°	13630.0	65.0
0°-180°	20956.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3558	3558	3558	3558	3558	
5°	3558	3542	3500	3530	3520	337
15°	3385	3349	3240	3178	3146	954
25°	3072	2969	2757	2625	2576	1413
35°	2647	2483	2200	1997	1926	1657
45°	2164	1948	1610	1381	1304	1671
55°	1646	1394	1046	854	792	1470
65°	1111	850	560	451	441	1102
75°	592	367	258	235	232	627
85°	138	71	61	61	61	159
90°	3	40	67	84	91	19
95°	218	108	131	148	145	259
105°	1023	1124	205	242	256	1093
115°	1934	1991	2076	518	276	1904
125°	2735	2779	2843	2866	2876	2439
135°	3384	3438	3468	3502	3496	2614
145°	3926	3922	3980	4003	3986	2456
155°	4323	4293	4333	4353	4326	1992
165°	4555	4535	4545	4568	4545	1287
175°	4659	4636	4642	4666	4632	443
180°	4649	4649	4649	4649	4649	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3558.5	3558.5	3558.5	3558.5	3558.5
2.5°	3574.5	3558.5	3522.9	3555.4	3548.9
5°	3558.5	3542.4	3500.4	3529.5	3519.8
7.5°	3529.5	3510.3	3465.2	3477.8	3461.8
10°	3490.8	3468.3	3404.0	3394.1	3375.0
12.5°	3442.7	3413.6	3326.5	3307.4	3271.8
15°	3384.6	3349.0	3239.7	3178.5	3146.4
17.5°	3316.9	3265.3	3130.1	3059.3	3007.7
20°	3239.7	3175.1	3014.2	2933.9	2862.8
22.5°	3156.0	3081.9	2894.9	2785.7	2737.5
25°	3072.3	2969.2	2756.6	2624.7	2576.2
27.5°	2972.5	2862.8	2627.8	2476.4	2402.3
30°	2866.3	2743.6	2486.0	2322.0	2234.9
32.5°	2763.1	2614.8	2351.0	2157.7	2077.0
35°	2647.2	2482.9	2199.7	1996.7	1925.6
37.5°	2534.5	2357.2	2057.9	1835.5	1755.1
40°	2415.3	2222.2	1909.6	1681.0	1597.3
42.5°	2292.9	2086.9	1761.7	1523.2	1442.9
45°	2164.1	1948.2	1610.3	1381.4	1304.2
47.5°	2041.9	1813.3	1465.4	1236.5	1165.8
50°	1906.5	1677.9	1323.6	1101.2	1033.9
52.5°	1774.3	1532.7	1188.3	975.8	914.6
55°	1645.5	1394.4	1046.5	853.5	792.3
57.5°	1513.6	1255.9	921.2	740.7	689.1
60°	1378.3	1120.7	788.9	624.9	573.3
62.5°	1246.4	988.8	676.1	521.8	496.1
65°	1111.1	850.1	560.3	451.0	441.1
67.5°	982.3	721.3	451.0	396.0	386.4
70°	847.0	595.9	373.4	341.3	328.4
72.5°	718.2	479.7	312.3	286.6	280.2
75°	592.5	367.0	257.6	235.1	232.0
77.5°	467.1	260.7	202.9	189.9	183.5
80°	350.9	186.9	154.5	141.8	141.8
82.5°	244.6	125.7	106.2	99.8	99.8
85°	138.4	70.7	61.1	61.1	61.1
87.5°	51.6	25.7	25.7	22.6	22.6
90°	3.2	40.4	67.1	84.3	90.7
92.5°	84.3	70.7	80.7	87.5	90.7
95°	218.5	107.5	131.0	148.2	144.6
97.5°	393.5	117.9	171.3	181.8	184.9
100°	595.6	134.7	191.7	218.5	225.3
102.5°	817.3	811.0	198.5	235.3	245.6
105°	1022.7	1123.8	205.3	242.1	255.6
107.5°	1261.5	1345.5	212.1	248.9	262.4
110°	1490.5	1560.8	588.8	252.4	265.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1705.8	1766.2	1709.0	258.9	269.2
115°	1934.3	1991.4	2075.7	518.1	276.0
117.5°	2132.9	2199.9	2257.5	1776.2	894.8
120°	2355.0	2405.3	2466.0	2506.4	2052.2
122.5°	2543.1	2597.0	2664.5	2684.5	2688.1
125°	2734.9	2778.8	2842.8	2866.3	2876.3
127.5°	2909.8	2957.0	3007.7	3041.3	3044.5
130°	3074.9	3128.8	3165.5	3202.7	3199.5
132.5°	3243.0	3286.9	3323.7	3354.1	3350.9
135°	3384.4	3438.4	3468.4	3502.3	3495.5
137.5°	3532.2	3572.6	3606.5	3640.1	3630.1
140°	3676.9	3704.0	3740.8	3771.2	3754.4
142.5°	3798.3	3821.9	3865.4	3892.2	3875.4
145°	3926.2	3922.5	3979.7	4003.2	3986.5
147.5°	4036.8	4026.8	4084.0	4100.8	4087.5
150°	4144.7	4121.1	4175.1	4195.0	4178.3
152.5°	4235.3	4208.6	4258.9	4279.3	4255.7
155°	4322.8	4292.8	4333.2	4353.2	4326.4
157.5°	4393.6	4366.8	4397.1	4420.7	4393.6
160°	4454.3	4433.9	4454.3	4474.3	4450.7
162.5°	4507.8	4487.9	4504.6	4528.2	4497.9
165°	4554.9	4535.0	4544.9	4568.5	4544.9
167.5°	4592.1	4571.7	4582.1	4605.6	4575.3
170°	4622.4	4602.1	4608.8	4632.4	4602.1
172.5°	4642.4	4622.4	4629.2	4652.8	4622.4
175°	4659.2	4635.6	4642.4	4666.0	4632.4
177.5°	4666.0	4642.4	4646.0	4669.6	4639.2
180°	4649.2	4649.2	4649.2	4649.2	4649.2

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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	8.75	9.47	9.83	10.55	12.02	4.71	5.43	5.79	6.51	7.98
	3H	10.42	11.06	11.51	12.15	13.64	5.89	6.53	6.98	7.62	9.11
	4H	11.03	11.64	12.13	12.73	14.22	6.33	6.94	7.44	8.03	9.53
	6H	11.45	12.01	12.56	13.10	14.61	6.65	7.21	7.76	8.30	9.81
	8H	11.57	12.11	12.69	13.21	14.72	6.74	7.27	7.85	8.38	9.88
	12H	11.63	12.14	12.75	13.24	14.76	6.78	7.29	7.90	8.39	9.91
4H	2H	8.75	9.36	9.86	10.45	11.95	5.29	5.90	6.40	6.99	8.49
	3H	10.58	11.08	11.69	12.20	13.71	6.63	7.14	7.75	8.26	9.77
	4H	11.27	11.73	12.39	12.84	14.37	7.18	7.64	8.30	8.75	10.28
	6H	11.78	12.18	12.91	13.31	14.83	7.59	7.99	8.72	9.12	10.64
	8H	11.96	12.33	13.08	13.45	14.99	7.72	8.09	8.84	9.21	10.75
	12H	12.05	12.39	13.19	13.52	15.06	7.78	8.12	8.92	9.25	10.79
8H	4H	11.23	11.60	12.35	12.72	14.26	7.45	7.82	8.58	8.94	10.48
	6H	11.79	12.10	12.94	13.26	14.80	7.97	8.28	9.11	9.44	10.97
	8H	12.01	12.28	13.16	13.42	14.98	8.16	8.43	9.31	9.57	11.12
	12H	12.15	12.39	13.31	13.52	15.11	8.27	8.51	9.43	9.65	11.24
12H	4H	11.17	11.51	12.32	12.64	14.19	7.45	7.79	8.59	8.92	10.46
	6H	11.77	12.04	12.92	13.18	14.73	8.02	8.29	9.17	9.43	10.98
	8H	11.99	12.22	13.14	13.36	14.95	8.22	8.46	9.38	9.60	11.19