

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: P923283

Luminaire Tested: DFN2DIP-SQ4F0-120D160US940-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923283
REPORT IS A COMBINATION OF REPORTS P901736 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D160US940-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

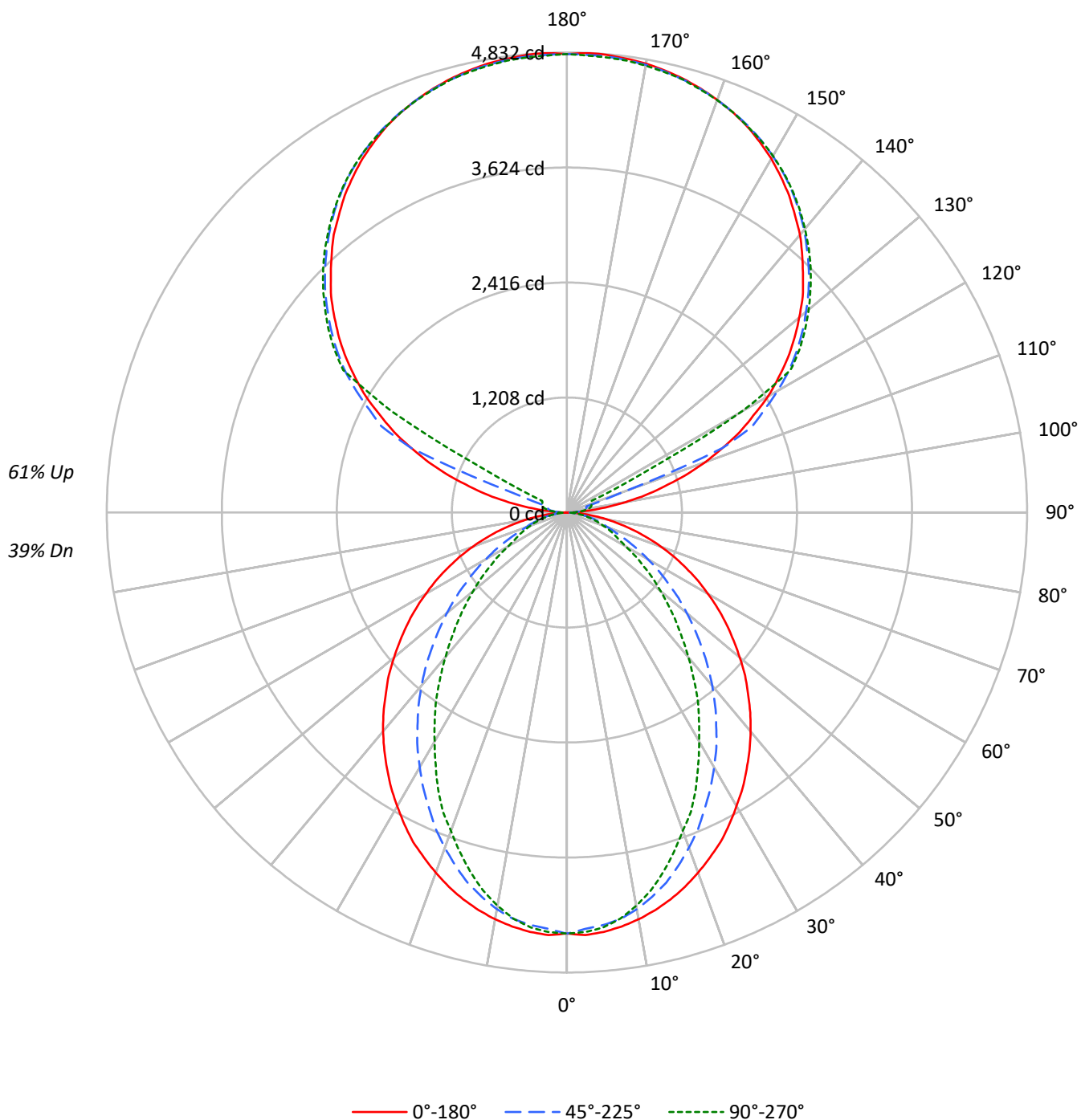
Lumens per Lamp: N/A
Luminaire Lumens: 23220.1 lumens
Efficiency: N/A
Efficacy: 96.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 239.7
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P923283

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US940-RLLONL

Luminous Intensity Polar Plot



TEST NUMBER: P923283

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US940-RLLONL

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	50	30	10
RCR																				
0	105	105	105	105	95	95	95	95	77	77	77	61	61	61	46	46	46	39		
1	96	92	88	85	87	83	80	78	68	66	64	54	53	52	41	41	40	34		
2	87	80	75	70	79	73	68	64	60	57	54	48	46	44	37	35	34	29		
3	80	71	64	58	73	65	59	54	53	49	46	43	40	37	33	31	29	25		
4	73	63	55	50	67	58	51	46	48	43	39	38	35	32	30	27	26	22		
5	67	56	48	43	61	52	45	40	43	38	34	35	31	28	27	25	23	19		
6	62	51	43	37	56	46	40	35	39	34	30	31	28	25	25	22	20	17		
7	57	46	38	33	52	42	35	31	35	30	26	29	25	22	23	20	18	15		
8	53	42	34	29	49	38	32	27	32	27	23	26	22	20	21	18	16	14		
9	50	38	31	26	45	35	29	24	29	24	21	24	20	18	19	17	15	12		
10	46	35	28	23	42	32	26	22	27	22	19	22	19	16	18	15	13	11		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3103	3103	3103
5°	3108	3055	3074
10°	3077	2995	2975
15°	3035	2897	2821
20°	2979	2761	2632
25°	2921	2608	2450
30°	2844	2452	2218
35°	2769	2284	2014
40°	2692	2110	1780
45°	2602	1917	1568
50°	2510	1722	1361
55°	2414	1513	1162
60°	2302	1295	958
65°	2174	1073	863
70°	2018	866	782
75°	1823	765	714
80°	1539	644	622
85°	1072	433	474

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 2602 cd/sqm

TEST NUMBER: P923283

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US940-RLLONL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	414.5	1.8
10°-20°	1137.8	4.9
20°-30°	1597.5	6.9
30°-40°	1741.4	7.5
40°-50°	1600.5	6.9
50°-60°	1256.9	5.4
60°-70°	818.2	3.5
70°-80°	421.2	1.8
80°-90°	116.0	0.5
90°-100°	158.8	0.7
100°-110°	591.9	2.5
110°-120°	1569.8	6.8
120°-130°	2603.6	11.2
130°-140°	2765.6	11.9
140°-150°	2570.3	11.1
150°-160°	2066.5	8.9
160°-170°	1331.6	5.7
170°-180°	458.3	2.0
0°-30°	3149.8	13.6
0°-40°	4891.2	21.1
0°-60°	7748.6	33.4
0°-90°	9103.9	39.2
90°-120°	2320.4	10.0
90°-150°	10259.9	44.2
90°-180°	14116.0	60.8
0°-180°	23220.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4422	4422	4422	4422	4422	
5°	4422	4403	4350	4386	4375	419
15°	4206	4162	4026	3950	3910	1185
25°	3818	3690	3426	3262	3202	1756
35°	3290	3086	2734	2482	2393	2059
45°	2690	2421	2001	1717	1621	2077
55°	2045	1733	1301	1061	985	1827
65°	1381	1056	696	560	548	1369
75°	736	456	320	292	288	779
85°	172	88	76	76	76	197
90°	3	42	70	87	94	22
95°	226	111	136	154	150	268
105°	1059	1164	213	251	265	1132
115°	2003	2062	2150	537	286	1972
125°	2832	2878	2944	2969	2979	2526
135°	3505	3561	3592	3627	3620	2708
145°	4066	4062	4122	4146	4129	2543
155°	4477	4446	4488	4508	4481	2063
165°	4717	4697	4707	4732	4707	1333
175°	4825	4801	4808	4832	4798	459
180°	4815	4815	4815	4815	4815	

TEST NUMBER: P923283

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US940-RLLONL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4422.5	4422.5	4422.5	4422.5	4422.5
2.5°	4442.5	4422.5	4378.4	4418.7	4410.6
5°	4422.5	4402.6	4350.3	4386.4	4374.6
7.5°	4386.4	4362.6	4306.6	4322.3	4302.3
10°	4338.4	4310.4	4230.5	4218.2	4194.5
12.5°	4278.5	4242.5	4134.1	4110.4	4066.3
15°	4206.4	4162.2	4026.3	3950.3	3910.4
17.5°	4122.3	4058.2	3890.0	3802.2	3738.0
20°	4026.3	3946.1	3746.1	3646.3	3557.9
22.5°	3922.3	3830.2	3597.9	3462.0	3402.1
25°	3818.3	3690.0	3425.9	3262.0	3201.7
27.5°	3694.3	3557.9	3265.8	3077.7	2985.5
30°	3562.2	3409.8	3089.6	2885.8	2777.5
32.5°	3434.0	3249.7	2921.9	2681.6	2581.3
35°	3290.1	3085.8	2733.7	2481.5	2393.2
37.5°	3149.9	2929.5	2557.5	2281.1	2181.3
40°	3001.7	2761.8	2373.3	2089.2	1985.1
42.5°	2849.6	2593.6	2189.4	1893.0	1793.2
45°	2689.6	2421.3	2001.3	1716.8	1620.8
47.5°	2537.5	2253.5	1821.2	1536.8	1448.9
50°	2369.5	2085.4	1645.0	1368.6	1285.0
52.5°	2205.1	1904.9	1476.9	1212.7	1136.8
55°	2045.0	1732.9	1300.6	1060.7	984.7
57.5°	1881.1	1560.9	1144.8	920.6	856.5
60°	1713.0	1392.8	980.4	776.7	712.6
62.5°	1549.1	1228.9	840.3	648.5	616.5
65°	1380.9	1056.5	696.4	560.5	548.2
67.5°	1220.8	896.3	560.5	492.1	480.3
70°	1052.7	740.6	464.1	424.2	408.0
72.5°	892.6	596.2	388.1	356.2	348.2
75°	736.3	456.0	320.2	292.1	288.3
77.5°	580.5	324.0	252.3	236.1	228.0
80°	436.1	232.3	191.9	176.2	176.2
82.5°	304.1	156.2	132.1	123.9	123.9
85°	172.0	87.9	76.0	76.0	76.0
87.5°	64.1	31.8	31.8	28.0	28.0
90°	3.3	41.8	69.5	87.3	93.9
92.5°	87.3	73.2	83.6	90.6	93.9
95°	226.3	111.3	135.7	153.5	149.8
97.5°	407.5	122.1	177.5	188.2	191.5
100°	616.9	139.5	198.6	226.3	233.4
102.5°	846.5	839.9	205.6	243.7	254.4
105°	1059.2	1163.9	212.7	250.7	264.7
107.5°	1306.5	1393.5	219.7	257.8	271.8
110°	1543.6	1616.5	609.8	261.4	275.1

TEST NUMBER: P923283

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US940-RLLONL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1766.7	1829.2	1770.0	268.1	278.8
115°	2003.3	2062.4	2149.7	536.6	285.9
117.5°	2208.9	2278.4	2338.1	1839.5	926.8
120°	2439.0	2491.1	2553.9	2595.8	2125.4
122.5°	2633.8	2689.7	2759.6	2780.3	2784.0
125°	2832.4	2877.9	2944.2	2968.6	2978.9
127.5°	3013.6	3062.5	3115.0	3149.8	3153.1
130°	3184.6	3240.4	3278.5	3316.9	3313.6
132.5°	3358.7	3404.2	3442.3	3473.7	3470.4
135°	3505.1	3561.0	3592.1	3627.2	3620.2
137.5°	3658.2	3700.1	3735.2	3770.0	3759.6
140°	3808.0	3836.1	3874.2	3905.7	3888.3
142.5°	3933.8	3958.2	4003.3	4031.1	4013.7
145°	4066.2	4062.5	4121.7	4146.0	4128.7
147.5°	4180.8	4170.4	4229.6	4247.0	4233.3
150°	4292.5	4268.1	4324.0	4344.7	4327.3
152.5°	4386.4	4358.7	4410.8	4432.0	4407.5
155°	4477.0	4446.0	4487.8	4508.5	4480.8
157.5°	4550.3	4522.6	4554.0	4578.4	4550.3
160°	4613.2	4592.0	4613.2	4633.9	4609.4
162.5°	4668.6	4648.0	4665.3	4689.7	4658.3
165°	4717.4	4696.7	4707.1	4731.5	4707.1
167.5°	4755.9	4734.8	4745.6	4769.9	4738.5
170°	4787.3	4766.3	4773.2	4797.7	4766.3
172.5°	4808.0	4787.3	4794.4	4818.8	4787.3
175°	4825.4	4801.0	4808.0	4832.4	4797.7
177.5°	4832.4	4808.0	4811.8	4836.2	4804.7
180°	4815.1	4815.1	4815.1	4815.1	4815.1

TEST NUMBER: P923283

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US940-RLONL

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	10.00	10.74	11.05	11.80	13.22	5.96	6.71	7.01	7.76	9.18
	3H	11.67	12.34	12.73	13.40	14.84	7.14	7.81	8.20	8.87	10.31
	4H	12.28	12.91	13.35	13.98	15.42	7.59	8.22	8.66	9.28	10.73
	6H	12.70	13.28	13.78	14.35	15.81	7.90	8.49	8.98	9.55	11.01
	8H	12.83	13.38	13.91	14.46	15.91	7.99	8.55	9.08	9.63	11.08
	12H	12.89	13.41	13.98	14.49	15.96	8.03	8.56	9.12	9.64	11.11
4H	2H	10.00	10.64	11.08	11.70	13.15	6.54	7.18	7.62	8.24	9.69
	3H	11.83	12.36	12.92	13.45	14.91	7.89	8.42	8.97	9.50	10.96
	4H	12.52	13.01	13.61	14.09	15.57	8.43	8.92	9.52	10.00	11.48
	6H	13.04	13.45	14.14	14.56	16.03	8.85	9.26	9.95	10.37	11.84
	8H	13.21	13.60	14.31	14.70	16.18	8.98	9.36	10.08	10.46	11.95
	12H	13.31	13.66	14.42	14.77	16.26	9.04	9.39	10.15	10.50	11.99
8H	4H	12.48	12.87	13.58	13.97	15.46	8.71	9.10	9.81	10.19	11.68
	6H	13.05	13.37	14.17	14.51	15.99	9.23	9.55	10.35	10.68	12.17
	8H	13.27	13.55	14.40	14.67	16.18	9.42	9.70	10.54	10.82	12.32
	12H	13.41	13.66	14.54	14.77	16.31	9.53	9.78	10.66	10.89	12.44
12H	4H	12.43	12.78	13.55	13.89	15.38	8.71	9.06	9.83	10.17	11.66
	6H	13.03	13.31	14.15	14.43	15.93	9.28	9.56	10.40	10.67	12.18
	8H	13.25	13.49	14.38	14.61	16.15	9.48	9.73	10.61	10.84	12.39

END OF REPORT