

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: P912368

Luminaire Tested: DFN2DIP-SQ4F0-120D160US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912368
REPORT IS A COMBINATION OF REPORTS P900215 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D160US850-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

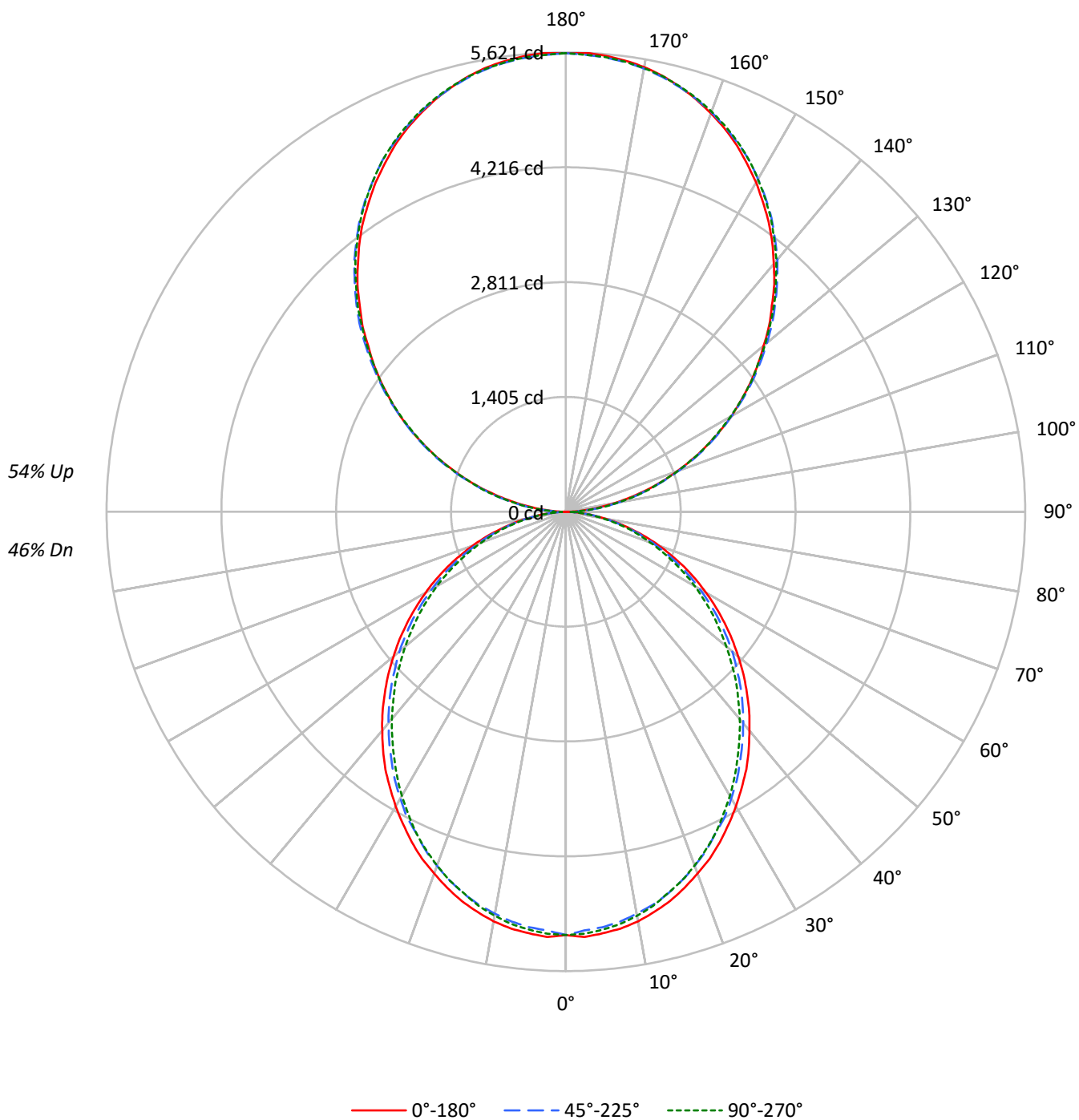
Lumens per Lamp: N/A
Luminaire Lumens: 28879.4 lumens
Efficiency: N/A
Efficacy: 120.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

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: P912368

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US850-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P912368

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US850-FLLFL

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	106	106	106	106	97	97	97	97	81	81	81	66	66	66	52	52	52
1	97	93	89	85	89	85	82	79	71	69	66	58	56	55	46	45	44
2	88	81	75	70	81	74	69	65	62	58	55	51	48	46	41	39	37
3	80	71	64	58	73	65	59	54	55	50	46	45	42	39	36	34	32
4	74	63	55	49	67	58	51	46	49	43	39	40	36	33	32	29	27
5	67	56	48	42	62	52	45	39	44	38	34	36	32	29	29	26	24
6	62	50	42	36	57	46	39	34	39	34	30	33	28	25	26	23	21
7	57	45	37	32	53	42	35	30	36	30	26	30	25	22	24	21	19
8	53	41	33	28	49	38	31	26	32	27	23	27	23	20	22	19	17
9	50	37	30	25	45	35	28	24	30	24	21	25	21	18	20	17	15
10	46	34	27	22	42	32	25	21	27	22	19	23	19	16	19	16	14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3633	3633	3633
5°	3639	3584	3608
10°	3610	3536	3560
15°	3557	3478	3485
20°	3485	3398	3408
25°	3413	3302	3318
30°	3324	3213	3205
35°	3239	3108	3084
40°	3135	3001	2969
45°	3031	2894	2852
50°	2917	2783	2716
55°	2798	2653	2592
60°	2663	2499	2449
65°	2516	2340	2281
70°	2329	2146	2101
75°	2070	1915	1935
80°	1758	1620	1617
85°	1271	1108	1086

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 4416 cd/sqm

TEST NUMBER: P912368

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US850-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	487.4	1.7
10°-20°	1371.3	4.7
20°-30°	2015.2	7.0
30°-40°	2340.6	8.1
40°-50°	2337.7	8.1
50°-60°	2038.4	7.1
60°-70°	1506.8	5.2
70°-80°	852.5	3.0
80°-90°	241.0	0.8
90°-100°	347.3	1.2
100°-110°	1103.4	3.8
110°-120°	1888.3	6.5
120°-130°	2483.4	8.6
130°-140°	2787.5	9.7
140°-150°	2733.5	9.5
150°-160°	2293.0	7.9
160°-170°	1520.7	5.3
170°-180°	531.5	1.8
0°-30°	3873.9	13.4
0°-40°	6214.5	21.5
0°-60°	10590.5	36.7
0°-90°	13190.8	45.7
90°-120°	3339.0	11.6
90°-150°	11343.4	39.3
90°-180°	15689.0	54.3
0°-180°	28879.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5178	5178	5178	5178	5178	
5°	5178	5159	5104	5143	5134	492
15°	4929	4900	4835	4855	4830	1388
25°	4461	4422	4337	4347	4337	2053
35°	3849	3799	3720	3690	3665	2404
45°	3132	3097	3022	2968	2948	2417
55°	2370	2340	2280	2221	2196	2119
65°	1599	1568	1519	1474	1449	1581
75°	836	827	801	772	782	893
85°	204	199	194	179	174	227
90°	5	61	166	156	161	28
95°	247	294	303	303	294	275
105°	1018	1032	1042	1051	1051	1075
115°	1895	1922	1914	1908	1895	1874
125°	2756	2798	2785	2770	2765	2463
135°	3565	3617	3628	3622	3609	2756
145°	4328	4362	4389	4394	4375	2704
155°	4949	4962	4978	5001	4986	2278
165°	5384	5379	5379	5412	5389	1519
175°	5602	5588	5578	5612	5583	532
180°	5612	5612	5612	5612	5612	

TEST NUMBER: P912368

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US850-FLLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5178.3	5178.3	5178.3	5178.3	5178.3
2.5°	5208.3	5183.5	5128.6	5178.3	5168.7
5°	5178.3	5158.6	5103.7	5143.3	5133.8
7.5°	5143.3	5113.7	5058.8	5099.0	5089.0
10°	5089.0	5054.0	4994.4	5034.0	5019.2
12.5°	5013.9	4984.3	4924.6	4949.5	4939.4
15°	4929.4	4899.8	4834.8	4854.9	4830.0
17.5°	4824.8	4795.2	4730.2	4755.1	4730.2
20°	4710.1	4680.5	4610.9	4625.6	4606.1
22.5°	4596.0	4551.1	4486.1	4486.1	4476.1
25°	4461.3	4421.7	4337.2	4346.7	4337.2
27.5°	4311.8	4277.0	4212.5	4197.7	4172.9
30°	4162.9	4122.7	4048.2	4033.4	4013.4
32.5°	4003.3	3973.8	3893.9	3863.9	3843.8
35°	3849.0	3799.4	3719.6	3689.5	3664.7
37.5°	3674.7	3629.9	3550.0	3515.2	3490.4
40°	3495.7	3455.5	3375.7	3331.3	3311.3
42.5°	3321.3	3281.2	3201.9	3151.8	3122.2
45°	3132.1	3097.3	3022.2	2967.9	2947.8
47.5°	2947.8	2912.9	2833.2	2778.3	2748.7
50°	2753.4	2728.6	2658.8	2589.1	2564.2
52.5°	2564.2	2529.4	2465.0	2410.0	2375.1
55°	2370.4	2340.3	2280.5	2220.9	2196.0
57.5°	2176.0	2151.1	2086.1	2026.5	2006.4
60°	1981.6	1962.0	1892.3	1837.4	1822.5
62.5°	1792.5	1757.5	1708.0	1658.3	1638.2
65°	1598.6	1568.5	1518.8	1473.9	1449.1
67.5°	1399.4	1374.1	1329.7	1294.9	1274.8
70°	1215.0	1194.9	1150.0	1115.2	1095.7
72.5°	1025.9	1005.9	981.0	946.2	931.3
75°	836.3	826.8	801.4	771.9	781.8
77.5°	667.2	647.1	637.1	622.3	607.5
80°	498.2	492.8	482.9	468.1	458.0
82.5°	338.6	338.6	333.9	313.8	313.8
85°	203.9	199.2	194.4	179.1	174.3
87.5°	89.8	79.7	69.8	54.9	49.7
90°	5.1	60.9	165.8	155.7	160.7
92.5°	104.9	142.2	147.2	152.3	152.3
95°	247.0	294.4	302.9	302.9	294.4
97.5°	411.1	455.1	473.8	473.8	473.8
100°	600.6	639.6	653.1	653.1	648.0
102.5°	800.3	829.1	847.6	852.7	847.6
105°	1018.5	1032.0	1042.2	1050.7	1050.7
107.5°	1235.1	1255.4	1255.4	1258.8	1235.1
110°	1444.9	1472.0	1472.0	1472.0	1458.4

TEST NUMBER: P912368

CATALOG NUMBER: DFN2DIP-SQ4F0-120D160US850-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1671.6	1700.4	1695.3	1681.8	1671.6
115°	1894.9	1922.0	1913.6	1908.5	1894.9
117.5°	2116.6	2153.8	2130.2	2116.6	2103.1
120°	2340.0	2377.1	2340.0	2340.0	2324.7
122.5°	2542.9	2590.4	2566.7	2553.1	2542.9
125°	2756.2	2798.5	2784.9	2769.7	2764.6
127.5°	2964.2	3016.7	2998.1	2977.8	2964.2
130°	3158.9	3219.8	3211.3	3201.1	3182.5
132.5°	3377.1	3424.5	3427.8	3404.2	3390.7
135°	3564.9	3617.3	3627.5	3622.4	3608.9
137.5°	3774.7	3817.0	3825.5	3822.1	3801.8
140°	3959.1	4001.4	4025.1	4025.1	4006.5
142.5°	4148.7	4190.9	4204.4	4209.5	4190.9
145°	4328.0	4361.8	4388.9	4394.0	4375.3
147.5°	4488.7	4531.0	4551.3	4559.8	4541.1
150°	4654.5	4683.3	4701.9	4717.1	4701.9
152.5°	4801.7	4830.5	4854.2	4872.7	4854.2
155°	4948.9	4962.4	4977.6	5001.4	4986.2
157.5°	5075.8	5086.0	5094.4	5128.2	5104.6
160°	5189.1	5199.3	5204.4	5233.1	5212.9
162.5°	5294.0	5294.0	5299.1	5331.3	5307.6
165°	5383.8	5378.6	5378.6	5412.5	5388.9
167.5°	5464.9	5449.7	5449.7	5483.6	5459.8
170°	5525.8	5512.3	5507.3	5541.1	5512.3
172.5°	5568.2	5554.6	5549.5	5583.4	5554.6
175°	5602.0	5588.5	5578.3	5612.2	5583.4
177.5°	5620.6	5607.1	5596.9	5625.7	5596.9
180°	5612.2	5612.2	5612.2	5612.2	5612.2

TEST NUMBER: P912368

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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	11.35	12.18	12.34	13.18	14.51	10.91	11.73	11.90	12.74	14.07
	3H	13.01	13.75	14.02	14.77	16.12	12.52	13.26	13.53	14.28	15.63
	4H	13.60	14.30	14.62	15.32	16.68	13.11	13.81	14.12	14.82	16.19
	6H	14.00	14.65	15.03	15.67	17.04	13.50	14.15	14.53	15.17	16.54
	8H	14.11	14.72	15.14	15.76	17.13	13.61	14.22	14.64	15.26	16.63
	12H	14.16	14.74	15.20	15.77	17.17	13.65	14.23	14.69	15.26	16.66
4H	2H	11.81	12.51	12.83	13.53	14.89	11.45	12.15	12.48	13.17	14.53
	3H	13.68	14.26	14.71	15.31	16.68	13.27	13.85	14.30	14.90	16.27
	4H	14.39	14.93	15.43	15.96	17.36	13.97	14.50	15.01	15.54	16.94
	6H	14.91	15.37	15.96	16.43	17.82	14.48	14.94	15.53	16.00	17.39
	8H	15.06	15.49	16.11	16.54	17.95	14.62	15.05	15.67	16.11	17.51
	12H	15.13	15.52	16.20	16.59	18.00	14.68	15.07	15.75	16.14	17.55
8H	4H	14.59	15.02	15.64	16.07	17.48	14.21	14.64	15.26	15.69	17.10
	6H	15.22	15.58	16.29	16.67	18.08	14.84	15.19	15.91	16.29	17.69
	8H	15.44	15.76	16.52	16.83	18.26	15.05	15.36	16.13	16.44	17.87
	12H	15.58	15.85	16.66	16.93	18.39	15.17	15.44	16.25	16.51	17.98
12H	4H	14.57	14.96	15.64	16.03	17.44	14.20	14.59	15.27	15.66	17.07
	6H	15.25	15.56	16.33	16.64	18.07	14.88	15.19	15.96	16.27	17.69
	8H	15.49	15.77	16.58	16.84	18.31	15.11	15.39	16.20	16.46	17.93