

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: P923308

Luminaire Tested: DFN2DIP-SQ4F0-140D120US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923308
REPORT IS A COMBINATION OF REPORTS P900181 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D120US940-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

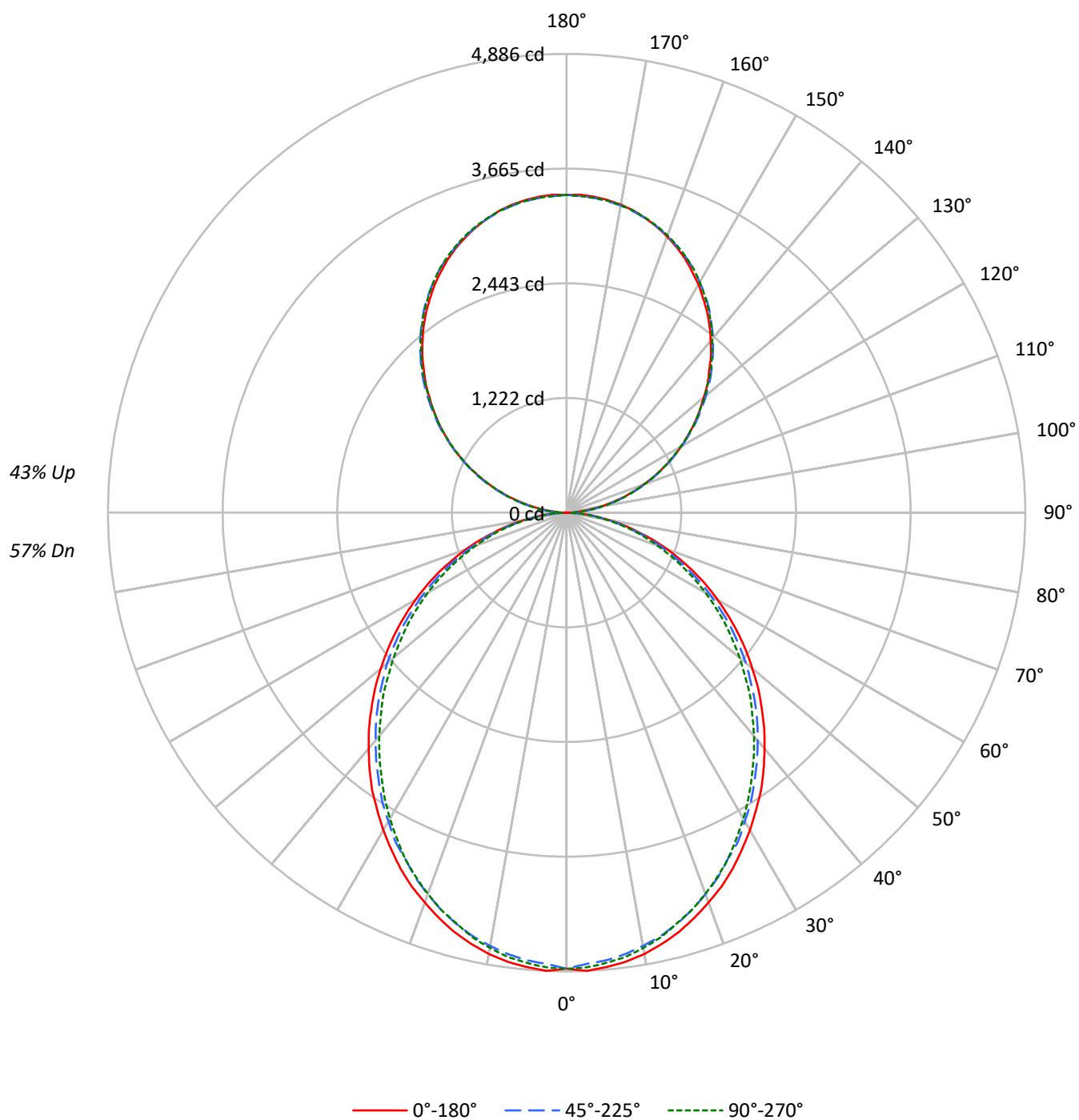
Lumens per Lamp: N/A
Luminaire Lumens: 21829.0 lumens
Efficiency: N/A
Efficacy: 93.3 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 233.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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	109	109	109	109	101	101	101	101	87	87	87	74	74	74	62	62	62
1	99	95	91	87	92	88	85	82	76	74	72	65	63	62	55	54	53
2	90	83	77	71	84	77	72	67	67	63	59	57	54	52	48	46	44
3	82	73	65	60	76	68	62	56	59	54	50	51	47	44	43	40	38
4	75	65	57	50	70	60	53	48	53	47	43	45	41	37	38	35	33
5	69	58	49	43	64	54	47	41	47	41	37	41	36	32	35	31	28
6	64	52	43	38	59	48	41	36	42	36	32	37	32	28	31	28	25
7	59	47	39	33	55	44	37	31	38	33	28	33	29	25	29	25	22
8	55	42	35	29	51	40	33	28	35	29	25	31	26	23	26	23	20
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	24	21	18
10	48	36	28	23	45	34	27	22	30	24	20	26	22	18	23	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3408	3408	3408
5°	3414	3362	3385
10°	3386	3317	3340
15°	3336	3263	3269
20°	3269	3188	3197
25°	3202	3098	3113
30°	3118	3014	3006
35°	3039	2915	2893
40°	2941	2815	2786
45°	2843	2715	2676
50°	2736	2610	2548
55°	2625	2489	2432
60°	2498	2344	2298
65°	2361	2196	2140
70°	2185	2014	1970
75°	1942	1796	1815
80°	1649	1519	1516
85°	1192	1039	1019

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2843 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	457.2	2.1
10°-20°	1286.4	5.9
20°-30°	1890.5	8.7
30°-40°	2195.7	10.1
40°-50°	2192.9	10.0
50°-60°	1912.2	8.8
60°-70°	1413.5	6.5
70°-80°	799.7	3.7
80°-90°	220.7	1.0
90°-100°	209.4	1.0
100°-110°	665.4	3.0
110°-120°	1138.7	5.2
120°-130°	1497.5	6.9
130°-140°	1680.9	7.7
140°-150°	1648.3	7.6
150°-160°	1382.7	6.3
160°-170°	917.0	4.2
170°-180°	320.5	1.5
0°-30°	3634.0	16.6
0°-40°	5829.7	26.7
0°-60°	9934.8	45.5
0°-90°	12368.7	56.7
90°-120°	2013.4	9.2
90°-150°	6840.1	31.3
90°-180°	9460.0	43.3
0°-180°	21829.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4858	4858	4858	4858	4858	
5°	4858	4839	4788	4825	4816	461
15°	4624	4596	4535	4554	4531	1302
25°	4185	4148	4069	4078	4069	1926
35°	3611	3564	3489	3461	3438	2255
45°	2938	2906	2835	2784	2765	2268
55°	2224	2195	2139	2083	2060	1988
65°	1500	1471	1425	1383	1359	1483
75°	784	776	752	724	733	837
85°	191	187	182	168	164	213
90°	3	37	100	94	97	21
95°	149	178	183	183	178	166
105°	614	622	628	634	634	648
115°	1143	1159	1154	1151	1143	1130
125°	1662	1688	1679	1670	1667	1485
135°	2150	2181	2188	2184	2176	1662
145°	2610	2630	2646	2650	2638	1631
155°	2984	2992	3002	3016	3007	1374
165°	3246	3243	3243	3264	3250	916
175°	3378	3370	3364	3384	3367	321
180°	3384	3384	3384	3384	3384	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4857.6	4857.6	4857.6	4857.6	4857.6
2.5°	4885.8	4862.5	4811.0	4857.6	4848.7
5°	4857.6	4839.2	4787.7	4824.9	4815.9
7.5°	4824.9	4797.1	4745.6	4783.2	4773.8
10°	4773.8	4741.1	4685.1	4722.3	4708.4
12.5°	4703.4	4675.7	4619.7	4643.0	4633.6
15°	4624.1	4596.4	4535.4	4554.3	4531.0
17.5°	4526.1	4498.3	4437.3	4460.6	4437.3
20°	4418.5	4390.8	4325.3	4339.2	4320.9
22.5°	4311.4	4269.3	4208.3	4208.3	4199.0
25°	4185.1	4147.9	4068.6	4077.5	4068.6
27.5°	4044.8	4012.2	3951.7	3937.8	3914.5
30°	3905.1	3867.4	3797.5	3783.7	3764.8
32.5°	3755.4	3727.7	3652.8	3624.6	3605.7
35°	3610.7	3564.2	3489.3	3461.1	3437.7
37.5°	3447.2	3405.1	3330.2	3297.5	3274.2
40°	3279.2	3241.5	3166.6	3125.1	3106.2
42.5°	3115.6	3078.0	3003.6	2956.6	2928.8
45°	2938.2	2905.5	2835.2	2784.1	2765.3
47.5°	2765.3	2732.6	2657.7	2606.2	2578.5
50°	2582.9	2559.7	2494.2	2428.8	2405.5
52.5°	2405.5	2372.8	2312.3	2260.8	2228.1
55°	2223.7	2195.4	2139.4	2083.4	2060.1
57.5°	2041.2	2017.9	1957.0	1901.0	1882.1
60°	1858.9	1840.6	1775.1	1723.6	1709.7
62.5°	1681.5	1648.8	1602.1	1555.6	1536.8
65°	1499.6	1471.3	1424.8	1382.6	1359.3
67.5°	1312.8	1289.0	1247.3	1214.6	1195.8
70°	1139.8	1121.0	1078.9	1046.2	1027.8
72.5°	962.4	943.5	920.2	887.6	873.7
75°	784.5	775.6	751.8	724.1	733.4
77.5°	625.9	607.1	597.6	583.8	569.9
80°	467.3	462.4	453.0	439.1	429.6
82.5°	317.6	317.6	313.2	294.4	294.4
85°	191.3	186.8	182.4	168.0	163.5
87.5°	84.3	74.8	65.5	51.5	46.5
90°	3.0	36.7	100.0	93.9	96.9
92.5°	63.2	85.7	88.7	91.8	91.8
95°	148.9	177.5	182.6	182.6	177.5
97.5°	247.9	274.5	285.7	285.7	285.7
100°	362.2	385.7	393.8	393.8	390.7
102.5°	482.6	499.9	511.1	514.2	511.1
105°	614.2	622.3	628.5	633.6	633.6
107.5°	744.8	757.1	757.1	759.0	744.8
110°	871.3	887.6	887.6	887.6	879.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1008.0	1025.4	1022.3	1014.1	1008.0
115°	1142.6	1159.0	1153.9	1150.8	1142.6
117.5°	1276.3	1298.8	1284.5	1276.3	1268.2
120°	1411.0	1433.4	1411.0	1411.0	1401.9
122.5°	1533.5	1562.0	1547.7	1539.5	1533.5
125°	1662.0	1687.5	1679.4	1670.2	1667.1
127.5°	1787.5	1819.1	1807.9	1795.6	1787.5
130°	1904.8	1941.5	1936.4	1930.3	1919.0
132.5°	2036.4	2065.0	2067.0	2052.7	2044.6
135°	2149.6	2181.3	2187.5	2184.3	2176.2
137.5°	2276.2	2301.7	2306.8	2304.7	2292.5
140°	2387.4	2412.9	2427.1	2427.1	2415.9
142.5°	2501.7	2527.2	2535.3	2538.3	2527.2
145°	2609.8	2630.2	2646.5	2649.6	2638.4
147.5°	2706.7	2732.2	2744.5	2749.6	2738.4
150°	2806.7	2824.0	2835.3	2844.5	2835.3
152.5°	2895.5	2912.8	2927.1	2938.4	2927.1
155°	2984.2	2992.4	3001.6	3015.9	3006.7
157.5°	3060.8	3066.9	3071.9	3092.4	3078.1
160°	3129.1	3135.3	3138.3	3155.7	3143.4
162.5°	3192.3	3192.3	3195.4	3214.8	3200.5
165°	3246.4	3243.4	3243.4	3263.7	3249.5
167.5°	3295.4	3286.2	3286.2	3306.6	3292.4
170°	3332.1	3323.9	3320.9	3341.3	3323.9
172.5°	3357.6	3349.4	3346.4	3366.8	3349.4
175°	3378.1	3369.9	3363.8	3384.1	3366.8
177.5°	3389.3	3381.1	3374.9	3392.3	3374.9
180°	3384.1	3384.1	3384.1	3384.1	3384.1

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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	12.14	13.06	13.03	13.98	15.15	11.69	12.62	12.59	13.54	14.71
	3H	13.81	14.64	14.72	15.56	16.76	13.32	14.15	14.23	15.07	16.27
	4H	14.40	15.18	15.32	16.12	17.32	13.91	14.69	14.83	15.62	16.83
	6H	14.81	15.53	15.74	16.47	17.69	14.31	15.03	15.24	15.97	17.19
	8H	14.92	15.60	15.86	16.56	17.78	14.41	15.10	15.36	16.06	17.28
	12H	14.97	15.62	15.92	16.57	17.82	14.46	15.11	15.41	16.06	17.31
4H	2H	12.61	13.39	13.54	14.32	15.53	12.25	13.04	13.18	13.97	15.18
	3H	14.48	15.14	15.42	16.10	17.32	14.08	14.73	15.02	15.69	16.91
	4H	15.20	15.80	16.15	16.76	18.00	14.78	15.38	15.73	16.33	17.58
	6H	15.73	16.24	16.69	17.22	18.47	15.29	15.81	16.26	16.79	18.04
	8H	15.88	16.36	16.85	17.34	18.60	15.44	15.92	16.41	16.90	18.16
	12H	15.96	16.39	16.94	17.38	18.65	15.51	15.94	16.49	16.93	18.20
8H	4H	15.41	15.89	16.37	16.86	18.12	15.03	15.51	15.99	16.49	17.75
	6H	16.04	16.44	17.04	17.46	18.72	15.66	16.06	16.65	17.08	18.33
	8H	16.27	16.62	17.27	17.63	18.90	15.88	16.23	16.88	17.23	18.51
	12H	16.41	16.72	17.41	17.71	19.04	15.99	16.30	17.00	17.30	18.63
12H	4H	15.39	15.83	16.38	16.82	18.09	15.03	15.46	16.01	16.45	17.72
	6H	16.07	16.43	17.07	17.43	18.71	15.70	16.06	16.70	17.06	18.34
	8H	16.32	16.63	17.33	17.63	18.95	15.94	16.25	16.95	17.25	18.57