

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: P923028

Luminaire Tested: DFN2DIP-SQ3F0-120D120US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923028
REPORT IS A COMBINATION OF REPORTS P900021 AND P896733
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ3F0-120D120US940-FLLFLL
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

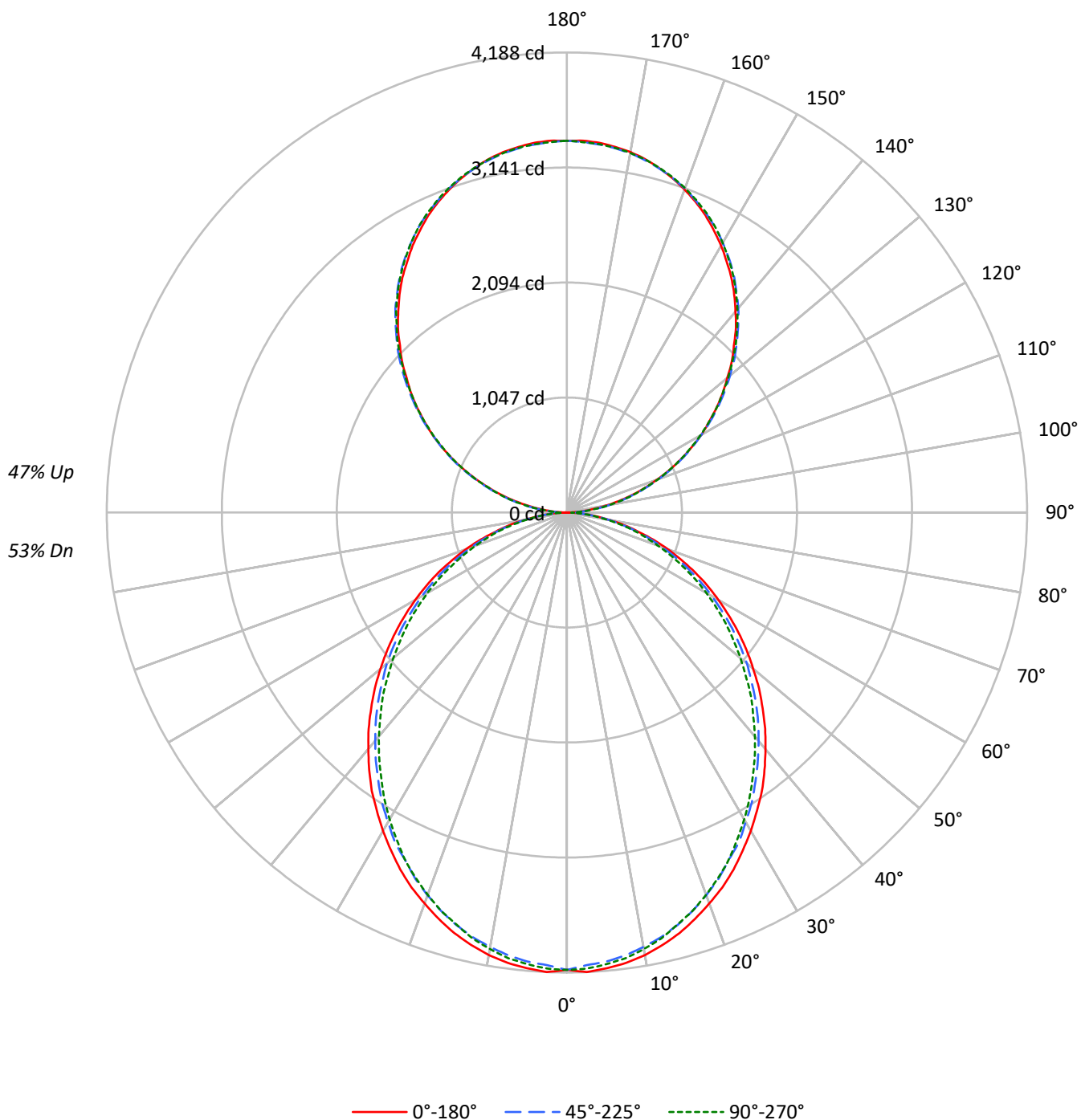
Lumens per Lamp: N/A
Luminaire Lumens: 20063.5 lumens
Efficiency: N/A
Efficacy: 91.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 219.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9957
Total Harmonic Distortion (THDi): 0.049
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

TEST NUMBER: P923028

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US940-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P923028

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US940-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
RCR																	
0	108	108	108	108	100	100	100	100	85	85	85		71	71	71		59
1	98	94	90	87	91	87	84	81	74	72	70		63	61	59		52
2	90	82	76	71	83	76	71	66	65	61	58		55	52	50		46
3	82	72	65	59	75	67	61	55	58	53	49		49	45	42		41
4	75	64	56	50	69	60	52	47	51	46	41		43	39	36		36
5	69	57	49	43	63	53	46	40	46	40	36		39	35	31		33
6	63	51	43	37	58	48	40	35	41	36	31		35	31	27		30
7	59	46	38	33	54	43	36	31	37	32	28		32	28	24		27
8	54	42	34	29	50	39	32	27	34	29	24		29	25	22		25
9	51	38	31	26	47	36	29	24	31	26	22		27	23	19		23
10	47	35	28	23	44	33	26	22	29	23	20		25	21	18		21

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4771	4771	4771
5°	4775	4701	4734
10°	4734	4635	4669
15°	4661	4555	4567
20°	4564	4446	4463
25°	4467	4316	4343
30°	4347	4195	4191
35°	4232	4052	4030
40°	4092	3909	3876
45°	3952	3764	3719
50°	3799	3612	3538
55°	3638	3437	3370
60°	3456	3229	3178
65°	3257	3013	2953
70°	3004	2749	2709
75°	2654	2433	2481
80°	2231	2031	2051
85°	1570	1345	1343

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3952 cd/sqm

TEST NUMBER: P923028

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US940-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	391.9	2.0
10°-20°	1102.6	5.5
20°-30°	1620.4	8.1
30°-40°	1882.0	9.4
40°-50°	1879.7	9.4
50°-60°	1639.0	8.2
60°-70°	1211.6	6.0
70°-80°	685.5	3.4
80°-90°	190.5	0.9
90°-100°	209.4	1.0
100°-110°	665.4	3.3
110°-120°	1138.7	5.7
120°-130°	1497.5	7.5
130°-140°	1680.9	8.4
140°-150°	1648.3	8.2
150°-160°	1382.7	6.9
160°-170°	917.0	4.6
170°-180°	320.5	1.6
0°-30°	3114.9	15.5
0°-40°	4996.9	24.9
0°-60°	8515.5	42.4
0°-90°	10603.1	52.8
90°-120°	2013.4	10.0
90°-150°	6840.1	34.1
90°-180°	9460.0	47.2
0°-180°	20063.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4164	4164	4164	4164	4164	
5°	4164	4148	4104	4136	4128	395
15°	3964	3940	3888	3904	3884	1116
25°	3587	3555	3487	3495	3487	1651
35°	3095	3055	2991	2967	2947	1933
45°	2518	2490	2430	2386	2370	1944
55°	1906	1882	1834	1786	1766	1704
65°	1285	1261	1221	1185	1165	1271
75°	672	665	644	621	629	718
85°	164	160	156	144	140	183
90°	3	37	100	94	97	19
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	

TEST NUMBER: P923028

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US940-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4163.7	4163.7	4163.7	4163.7	4163.7
2.5°	4187.8	4167.9	4123.7	4163.7	4156.0
5°	4163.7	4147.9	4103.7	4135.6	4127.9
7.5°	4135.6	4111.8	4067.6	4099.9	4091.9
10°	4091.9	4063.8	4015.8	4047.7	4035.8
12.5°	4031.5	4007.7	3959.7	3979.7	3971.6
15°	3963.6	3939.8	3887.5	3903.6	3883.7
17.5°	3879.5	3855.7	3803.4	3823.4	3803.4
20°	3787.3	3763.5	3707.5	3719.3	3703.6
22.5°	3695.5	3659.4	3607.1	3607.1	3599.1
25°	3587.2	3555.3	3487.4	3495.1	3487.4
27.5°	3467.0	3439.0	3387.2	3375.2	3355.3
30°	3347.2	3314.9	3255.0	3243.2	3227.0
32.5°	3218.9	3195.2	3131.0	3106.8	3090.7
35°	3094.9	3055.0	2990.8	2966.6	2946.7
37.5°	2954.7	2918.7	2854.5	2826.5	2806.5
40°	2810.8	2778.5	2714.3	2678.6	2662.5
42.5°	2670.6	2638.3	2574.5	2534.2	2510.4
45°	2518.5	2490.5	2430.1	2386.4	2370.3
47.5°	2370.3	2342.2	2278.1	2233.9	2210.1
50°	2213.9	2194.0	2137.9	2081.8	2061.8
52.5°	2061.8	2033.8	1982.0	1937.8	1909.8
55°	1905.9	1881.8	1833.7	1785.7	1765.8
57.5°	1749.6	1729.7	1677.4	1629.4	1613.3
60°	1593.3	1577.6	1521.5	1477.4	1465.4
62.5°	1441.3	1413.2	1373.3	1333.4	1317.2
65°	1285.4	1261.1	1221.2	1185.1	1165.2
67.5°	1125.2	1104.8	1069.2	1041.2	1025.0
70°	977.0	960.8	924.7	896.7	881.0
72.5°	824.9	808.8	788.8	760.8	748.9
75°	672.4	664.8	644.3	620.6	628.7
77.5°	536.5	520.3	512.3	500.3	488.5
80°	400.6	396.3	388.3	376.4	368.3
82.5°	272.2	272.2	268.5	252.4	252.4
85°	164.0	160.2	156.3	144.0	140.2
87.5°	72.2	64.1	56.1	44.1	39.9
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

TEST NUMBER: P923028

CATALOG NUMBER: DFN2DIP-SQ3F0-120D120US940-FLLFLL

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	12.92	13.81	13.86	14.76	15.99	12.48	13.37	13.41	14.32	15.55
	3H	14.58	15.38	15.53	16.34	17.59	14.09	14.89	15.04	15.85	17.10
	4H	15.17	15.92	16.13	16.89	18.15	14.67	15.43	15.63	16.39	17.65
	6H	15.57	16.26	16.54	17.23	18.50	15.07	15.76	16.04	16.73	18.00
	8H	15.67	16.33	16.65	17.32	18.59	15.17	15.83	16.14	16.82	18.09
	12H	15.72	16.35	16.70	17.33	18.62	15.21	15.84	16.19	16.82	18.11
4H	2H	13.39	14.14	14.35	15.10	16.36	13.03	13.78	13.99	14.75	16.01
	3H	15.25	15.88	16.22	16.87	18.15	14.84	15.47	15.81	16.46	17.74
	4H	15.96	16.53	16.94	17.52	18.82	15.54	16.11	16.52	17.10	18.40
	6H	16.47	16.97	17.47	17.98	19.28	16.04	16.53	17.03	17.55	18.84
	8H	16.62	17.08	17.62	18.09	19.40	16.18	16.65	17.18	17.65	18.96
	12H	16.69	17.11	17.71	18.13	19.45	16.24	16.66	17.26	17.68	19.00
8H	4H	16.15	16.62	17.15	17.62	18.93	15.78	16.24	16.77	17.24	18.56
	6H	16.78	17.16	17.80	18.21	19.52	16.40	16.78	17.42	17.82	19.14
	8H	17.00	17.34	18.03	18.37	19.70	16.61	16.94	17.63	17.97	19.30
	12H	17.13	17.42	18.16	18.45	19.82	16.72	17.01	17.75	18.04	19.41
12H	4H	16.14	16.56	17.16	17.58	18.90	15.77	16.19	16.79	17.21	18.53
	6H	16.81	17.15	17.84	18.18	19.51	16.44	16.77	17.47	17.81	19.14
	8H	17.05	17.34	18.08	18.37	19.75	16.67	16.96	17.70	17.99	19.36