

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: P923342

Luminaire Tested: DFN2DIP-SQ4F0-160D110US940-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923342
REPORT IS A COMBINATION OF REPORTS P900166 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US940-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

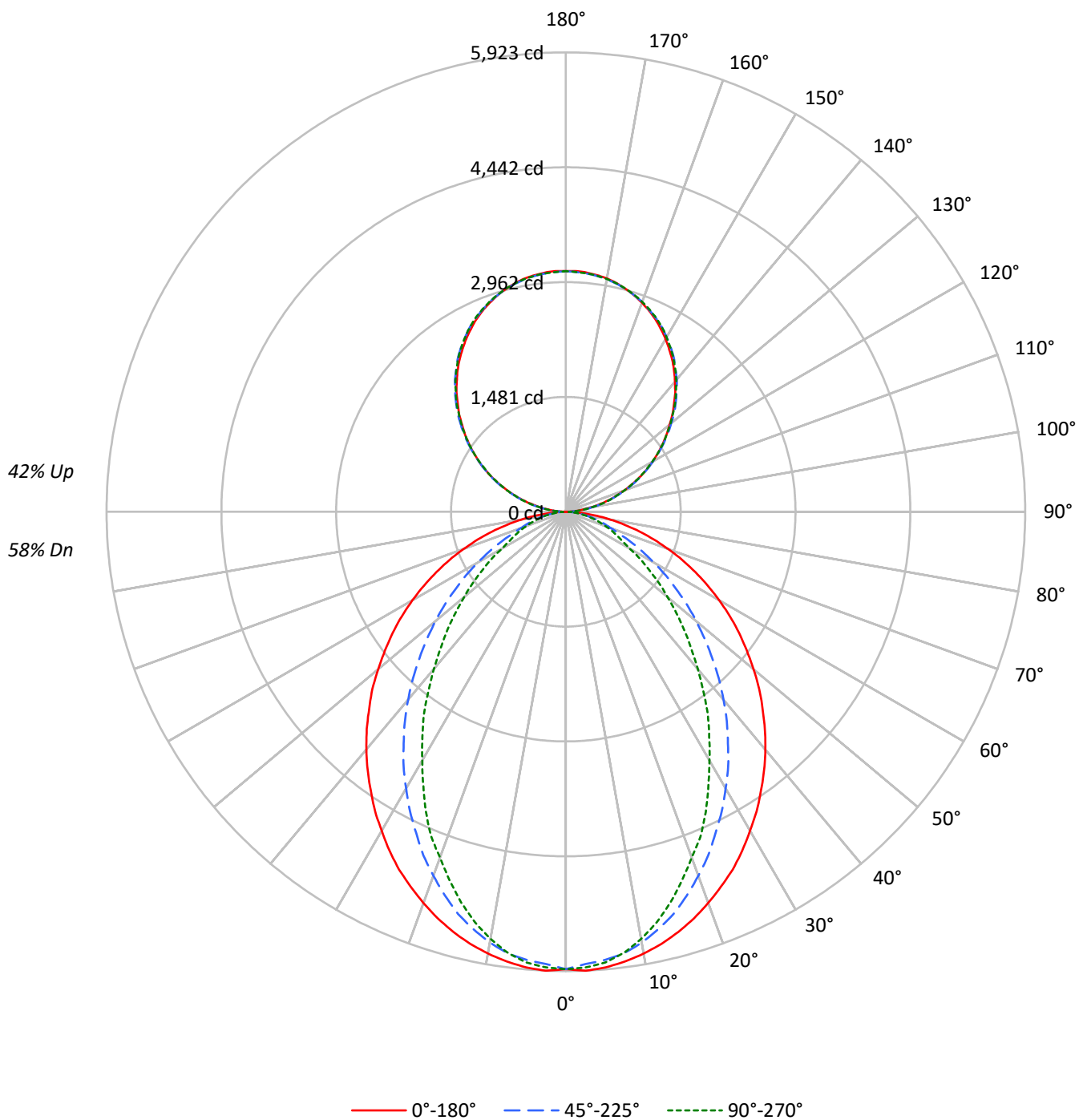
Lumens per Lamp: N/A
Luminaire Lumens: 20808.0 lumens
Efficiency: N/A
Efficacy: 83.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 249.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
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: P923342

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLLFLL

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	102	102	102	102	88	88	88	75	75	75	64	64	64
1	100	96	92	89	93	90	87	84	78	76	73	67	65	64	57	56	55
2	92	85	79	74	85	79	74	70	69	65	62	60	57	54	51	49	47
3	84	75	68	62	78	70	64	59	61	57	53	53	50	47	46	43	41
4	77	67	59	53	72	63	56	50	55	50	45	48	44	40	41	38	36
5	71	60	52	46	66	56	49	44	50	44	40	43	39	35	37	34	31
6	66	54	46	40	61	51	44	38	45	39	35	39	35	31	34	31	28
7	61	49	41	36	57	46	39	34	41	35	31	36	31	28	31	28	25
8	57	45	37	32	53	42	35	30	37	32	28	33	29	25	29	25	23
9	53	41	33	28	49	39	32	27	34	29	25	31	26	23	27	23	21
10	50	38	30	26	46	36	29	25	32	26	23	28	24	21	25	21	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4138	4138	4138
5°	4144	4073	4099
10°	4103	3994	3967
15°	4046	3862	3762
20°	3972	3681	3510
25°	3895	3478	3266
30°	3792	3269	2957
35°	3692	3045	2685
40°	3589	2813	2374
45°	3470	2556	2091
50°	3347	2295	1815
55°	3218	2017	1550
60°	3069	1726	1277
65°	2898	1431	1151
70°	2691	1155	1043
75°	2430	1020	951
80°	2053	858	829
85°	1429	578	632

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3470 cd/sqm

TEST NUMBER: P923342

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLFL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	552.6	2.7
10°-20°	1517.1	7.3
20°-30°	2130.0	10.2
30°-40°	2321.8	11.2
40°-50°	2134.0	10.3
50°-60°	1675.9	8.1
60°-70°	1090.9	5.2
70°-80°	561.5	2.7
80°-90°	152.2	0.7
90°-100°	192.0	0.9
100°-110°	609.9	2.9
110°-120°	1043.8	5.0
120°-130°	1372.7	6.6
130°-140°	1540.8	7.4
140°-150°	1511.0	7.3
150°-160°	1267.5	6.1
160°-170°	840.6	4.0
170°-180°	293.8	1.4
0°-30°	4199.7	20.2
0°-40°	6521.6	31.3
0°-60°	10331.5	49.7
0°-90°	12136.1	58.3
90°-120°	1845.7	8.9
90°-150°	6270.1	30.1
90°-180°	8672.0	41.7
0°-180°	20808.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5897	5897	5897	5897	5897	
5°	5897	5870	5800	5848	5833	559
15°	5608	5550	5368	5267	5214	1580
25°	5091	4920	4568	4349	4269	2341
35°	4387	4114	3645	3309	3191	2746
45°	3586	3228	2668	2289	2161	2769
55°	2727	2310	1734	1414	1313	2437
65°	1841	1409	928	747	731	1825
75°	982	608	427	390	384	1038
85°	229	117	101	101	101	263
90°	3	34	92	86	89	20
95°	136	163	167	167	163	152
105°	563	570	576	581	581	594
115°	1048	1062	1058	1055	1048	1036
125°	1524	1547	1539	1531	1528	1361
135°	1970	2000	2005	2002	1995	1523
145°	2392	2411	2426	2429	2418	1495
155°	2736	2743	2752	2765	2756	1259
165°	2976	2973	2973	2992	2979	840
175°	3097	3089	3083	3102	3086	294
180°	3102	3102	3102	3102	3102	

TEST NUMBER: P923342

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLFL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5896.7	5896.7	5896.7	5896.7	5896.7
2.5°	5923.3	5896.7	5837.8	5891.6	5880.8
5°	5896.7	5870.0	5800.4	5848.5	5832.7
7.5°	5848.5	5816.8	5742.1	5763.0	5736.5
10°	5784.6	5747.3	5640.8	5624.4	5592.6
12.5°	5704.7	5656.7	5512.3	5480.5	5421.7
15°	5608.5	5549.6	5368.5	5267.1	5213.8
17.5°	5496.4	5410.9	5186.7	5069.5	4984.0
20°	5368.5	5261.4	4994.7	4861.7	4744.0
22.5°	5229.7	5106.8	4797.1	4616.0	4536.1
25°	5091.0	4920.0	4567.9	4349.3	4269.0
27.5°	4925.7	4744.0	4354.4	4103.7	3980.8
30°	4749.6	4546.4	4119.4	3847.7	3703.4
32.5°	4578.7	4332.9	3895.8	3575.4	3441.7
35°	4386.7	4114.4	3645.0	3308.7	3191.0
37.5°	4199.9	3906.0	3410.1	3041.4	2908.4
40°	4002.3	3682.4	3164.3	2785.5	2646.9
42.5°	3799.6	3458.1	2919.2	2524.0	2390.9
45°	3586.1	3228.3	2668.4	2289.0	2161.1
47.5°	3383.4	3004.7	2428.3	2049.0	1931.8
50°	3159.2	2780.4	2193.3	1824.8	1713.2
52.5°	2940.1	2539.9	1969.2	1617.0	1515.6
55°	2726.7	2310.5	1734.2	1414.3	1313.0
57.5°	2508.1	2081.3	1526.4	1227.4	1141.9
60°	2283.9	1857.1	1307.2	1035.5	950.0
62.5°	2065.4	1638.5	1120.4	864.5	822.1
65°	1841.2	1408.6	928.5	747.3	730.9
67.5°	1627.7	1195.2	747.3	656.2	640.3
70°	1403.6	987.4	618.8	565.6	544.1
72.5°	1190.1	794.9	517.5	475.0	464.2
75°	981.8	608.1	426.9	389.5	384.4
77.5°	773.9	431.9	336.3	314.8	304.1
80°	581.5	309.7	255.9	235.0	235.0
82.5°	405.4	208.4	176.1	165.3	165.3
85°	229.3	117.2	101.4	101.4	101.4
87.5°	85.5	42.4	42.4	37.4	37.4
90°	2.8	33.7	91.7	86.1	88.8
92.5°	58.0	78.6	81.3	84.2	84.2
95°	136.5	162.7	167.4	167.4	162.7
97.5°	227.3	251.6	261.9	261.9	261.9
100°	332.0	353.5	361.0	361.0	358.2
102.5°	442.4	458.2	468.6	471.4	468.6
105°	563.0	570.5	576.1	580.8	580.8
107.5°	682.7	693.9	693.9	695.8	682.7
110°	798.7	813.7	813.7	813.7	806.2

TEST NUMBER: P923342

CATALOG NUMBER: DFN2DIP-SQ4F0-160D110US940-RLFL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	924.0	939.9	937.1	929.6	924.0
115°	1047.5	1062.4	1057.7	1055.0	1047.5
117.5°	1170.0	1190.5	1177.4	1170.0	1162.5
120°	1293.4	1314.0	1293.4	1293.4	1285.0
122.5°	1405.7	1431.8	1418.7	1411.2	1405.7
125°	1523.5	1546.8	1539.4	1531.0	1528.1
127.5°	1638.5	1667.5	1657.2	1646.0	1638.5
130°	1746.1	1779.8	1775.0	1769.4	1759.2
132.5°	1866.7	1892.9	1894.8	1881.7	1874.2
135°	1970.5	1999.5	2005.1	2002.3	1994.8
137.5°	2086.5	2109.9	2114.5	2112.6	2101.5
140°	2188.4	2211.8	2224.9	2224.9	2214.7
142.5°	2293.2	2316.6	2324.1	2326.8	2316.6
145°	2392.3	2411.0	2426.0	2428.8	2418.5
147.5°	2481.2	2504.5	2515.8	2520.4	2510.2
150°	2572.9	2588.7	2599.0	2607.5	2599.0
152.5°	2654.2	2670.0	2683.2	2693.5	2683.2
155°	2735.6	2743.0	2751.5	2764.6	2756.1
157.5°	2805.7	2811.3	2815.9	2834.7	2821.5
160°	2868.4	2874.0	2876.7	2892.7	2881.5
162.5°	2926.3	2926.3	2929.2	2946.9	2933.8
165°	2975.9	2973.1	2973.1	2991.8	2978.7
167.5°	3020.8	3012.4	3012.4	3031.1	3018.0
170°	3054.5	3047.0	3044.2	3062.8	3047.0
172.5°	3077.8	3070.3	3067.6	3086.3	3070.3
175°	3096.6	3089.1	3083.4	3102.2	3086.3
177.5°	3106.8	3099.3	3093.7	3109.7	3093.7
180°	3102.2	3102.2	3102.2	3102.2	3102.2

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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	12.84	13.74	13.73	14.64	15.79	8.80	9.70	9.69	10.60	11.75
	3H	14.52	15.33	15.43	16.25	17.42	9.99	10.80	10.89	11.71	12.89
	4H	15.14	15.90	16.06	16.82	18.01	10.45	11.21	11.36	12.13	13.31
	6H	15.57	16.27	16.50	17.20	18.39	10.77	11.47	11.70	12.40	13.60
	8H	15.70	16.37	16.63	17.31	18.51	10.86	11.53	11.80	12.47	13.67
	12H	15.76	16.40	16.71	17.34	18.56	10.91	11.55	11.85	12.48	13.70
4H	2H	12.86	13.63	13.79	14.55	15.73	9.40	10.17	10.33	11.09	12.27
	3H	14.70	15.34	15.64	16.29	17.49	10.76	11.39	11.69	12.35	13.54
	4H	15.40	15.98	16.34	16.93	18.15	11.31	11.89	12.26	12.84	14.06
	6H	15.93	16.42	16.88	17.39	18.62	11.74	12.23	12.69	13.20	14.43
	8H	16.10	16.57	17.06	17.53	18.77	11.87	12.33	12.83	13.29	14.53
	12H	16.21	16.62	17.18	17.60	18.85	11.94	12.35	12.91	13.33	14.58
8H	4H	15.38	15.84	16.33	16.80	18.04	11.60	12.06	12.56	13.03	14.27
	6H	15.95	16.33	16.93	17.34	18.57	12.12	12.51	13.11	13.51	14.75
	8H	16.17	16.51	17.16	17.50	18.76	12.32	12.65	13.31	13.65	14.90
	12H	16.31	16.61	17.31	17.60	18.90	12.44	12.74	13.43	13.72	15.03
12H	4H	15.33	15.75	16.31	16.73	17.97	11.61	12.03	12.59	13.01	14.25
	6H	15.92	16.26	16.92	17.26	18.51	12.17	12.51	13.17	13.51	14.76
	8H	16.15	16.45	17.15	17.44	18.74	12.39	12.69	13.38	13.67	14.98

END OF REPORT