

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: P917880

Luminaire Tested: DFN2DIP-SQ4F0-160D100US930-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917880
REPORT IS A COMBINATION OF REPORTS P900147 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D100US930-FLLFL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

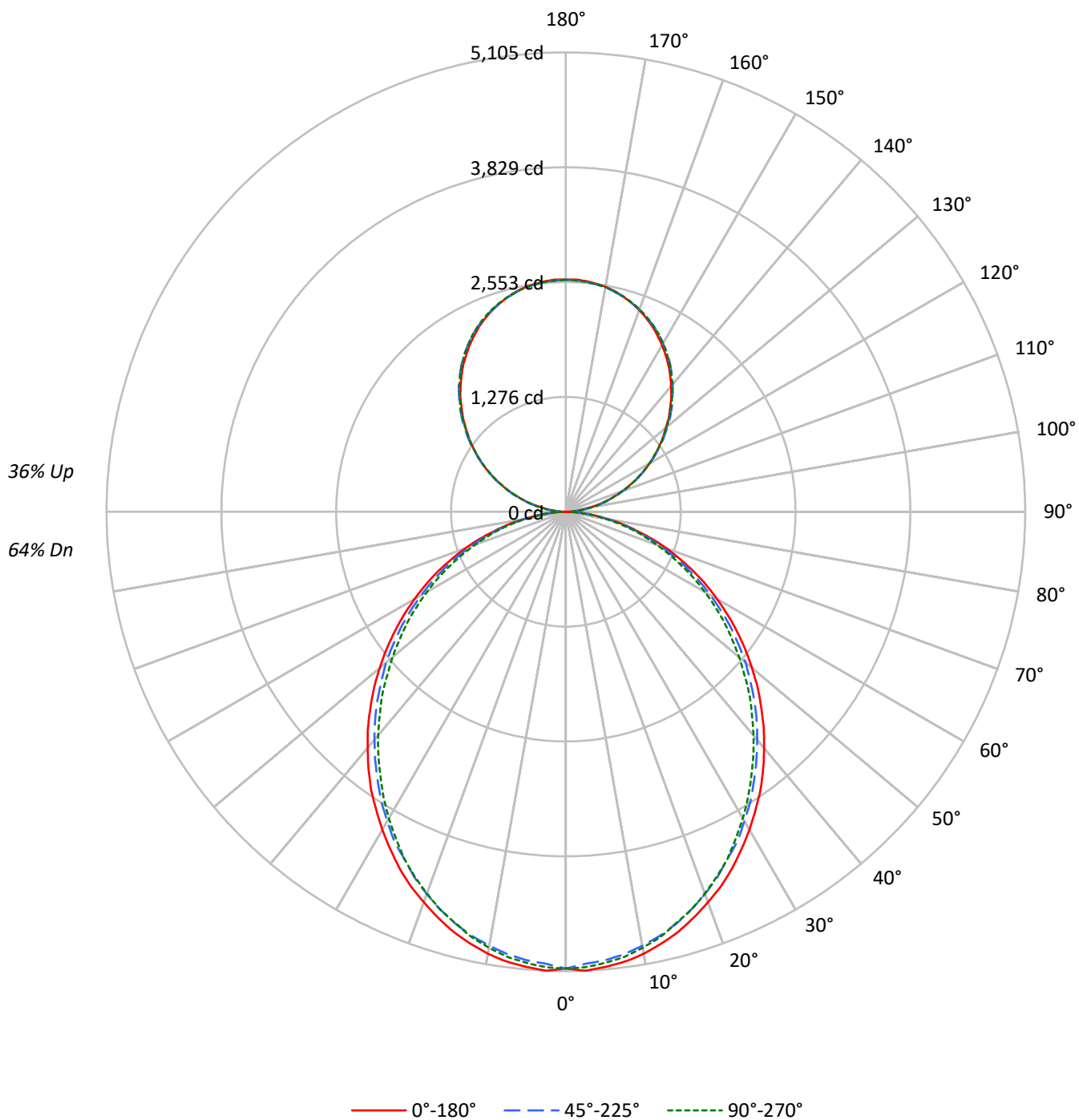
Lumens per Lamp: N/A
Luminaire Lumens: 20129.7 lumens
Efficiency: N/A
Efficacy: 83.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 241.4
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: P917880

CATALOG NUMBER: DFN2DIP-SQ4F0-160D100US930-FLLFLL

Luminous Intensity Polar Plot



TEST NUMBER: P917880

CATALOG NUMBER: DFN2DIP-SQ4F0-160D100US930-FLLFLL

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20			
RC	80				70				50				30				10			0
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50	30	10	0
RCR																				
0	111	111	111	111	104	104	104	104	91	91	91		80	80	80		69	69	69	64
1	101	97	93	89	95	91	87	84	80	77	75		70	68	66		61	60	58	54
2	92	84	78	73	86	79	74	69	70	66	62		62	58	56		54	51	49	45
3	84	74	67	61	79	70	63	58	62	57	52		55	50	47		48	45	42	38
4	77	66	58	51	72	62	55	49	55	49	45		49	44	40		43	39	36	33
5	71	59	50	44	66	55	48	42	49	43	39		44	39	35		38	35	32	29
6	65	53	44	38	61	50	42	37	45	38	34		40	35	31		35	31	28	25
7	60	48	40	34	56	45	38	32	40	34	30		36	31	27		32	28	25	22
8	56	43	35	30	53	41	34	29	37	31	27		33	28	24		29	25	22	20
9	52	40	32	27	49	38	31	26	34	28	24		30	26	22		27	23	20	18
10	49	37	29	24	46	35	28	23	31	26	22		28	23	20		25	21	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3562	3562	3562
5°	3567	3513	3537
10°	3538	3466	3490
15°	3486	3410	3416
20°	3416	3331	3340
25°	3346	3237	3253
30°	3258	3149	3141
35°	3175	3046	3023
40°	3073	2942	2911
45°	2971	2837	2796
50°	2859	2728	2663
55°	2742	2601	2541
60°	2610	2450	2401
65°	2466	2294	2236
70°	2283	2104	2059
75°	2029	1877	1897
80°	1724	1587	1585
85°	1246	1086	1065

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2971 cd/sqm

TEST NUMBER: P917880

CATALOG NUMBER: DFN2DIP-SQ4F0-160D100US930-FLLFLL

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	477.7	2.4
10°-20°	1344.2	6.7
20°-30°	1975.4	9.8
30°-40°	2294.3	11.4
40°-50°	2291.5	11.4
50°-60°	1998.1	9.9
60°-70°	1477.0	7.3
70°-80°	835.6	4.2
80°-90°	227.9	1.1
90°-100°	159.6	0.8
100°-110°	507.0	2.5
110°-120°	867.6	4.3
120°-130°	1141.0	5.7
130°-140°	1280.7	6.4
140°-150°	1255.9	6.2
150°-160°	1053.5	5.2
160°-170°	698.7	3.5
170°-180°	244.2	1.2
0°-30°	3797.3	18.9
0°-40°	6091.6	30.3
0°-60°	10381.1	51.6
0°-90°	12921.6	64.2
90°-120°	1534.1	7.6
90°-150°	5211.7	25.9
90°-180°	7208.0	35.8
0°-180°	20129.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5076	5076	5076	5076	5076	
5°	5076	5057	5003	5042	5032	482
15°	4832	4803	4739	4759	4734	1361
25°	4373	4334	4251	4261	4251	2012
35°	3773	3724	3646	3616	3592	2356
45°	3070	3036	2962	2909	2890	2369
55°	2324	2294	2236	2177	2153	2077
65°	1567	1537	1489	1445	1420	1549
75°	820	810	786	756	766	875
85°	200	195	190	176	171	223
90°	2	28	76	72	74	19
95°	114	135	139	139	135	126
105°	468	474	479	483	483	494
115°	871	883	879	877	871	861
125°	1266	1286	1280	1272	1270	1132
135°	1638	1662	1667	1664	1658	1266
145°	1988	2004	2016	2019	2010	1242
155°	2274	2280	2287	2298	2291	1047
165°	2474	2471	2471	2487	2476	698
175°	2574	2568	2563	2578	2565	245
180°	2578	2578	2578	2578	2578	

TEST NUMBER: P917880

CATALOG NUMBER: DFN2DIP-SQ4F0-160D100US930-FLLFLL

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5075.8	5075.8	5075.8	5075.8	5075.8
2.5°	5105.3	5080.9	5027.1	5075.8	5066.4
5°	5075.8	5056.6	5002.8	5041.6	5032.3
7.5°	5041.6	5012.6	4958.7	4998.1	4988.2
10°	4988.2	4954.1	4895.6	4934.4	4919.9
12.5°	4914.8	4885.8	4827.2	4851.6	4841.7
15°	4831.9	4802.9	4739.2	4758.9	4734.5
17.5°	4729.4	4700.4	4636.7	4661.0	4636.7
20°	4617.0	4588.0	4519.6	4534.1	4515.0
22.5°	4505.2	4461.1	4397.4	4397.4	4387.6
25°	4373.1	4334.3	4251.4	4260.7	4251.4
27.5°	4226.5	4192.3	4129.2	4114.7	4090.4
30°	4080.5	4041.2	3968.1	3953.6	3934.0
32.5°	3924.1	3895.2	3816.9	3787.4	3767.7
35°	3773.0	3724.3	3646.0	3616.5	3592.2
37.5°	3602.1	3558.0	3479.9	3445.6	3421.3
40°	3426.5	3387.2	3309.0	3265.4	3245.8
42.5°	3255.6	3216.3	3138.6	3089.4	3060.4
45°	3070.3	3036.0	2962.5	2909.1	2889.5
47.5°	2889.5	2855.3	2777.2	2723.3	2694.3
50°	2699.0	2674.6	2606.3	2537.9	2513.6
52.5°	2513.6	2479.4	2416.2	2362.3	2328.2
55°	2323.5	2294.0	2235.5	2176.9	2152.6
57.5°	2133.0	2108.6	2044.9	1986.4	1966.7
60°	1942.4	1923.2	1854.9	1801.0	1786.5
62.5°	1757.0	1722.8	1674.1	1625.5	1605.8
65°	1566.9	1537.4	1488.7	1444.8	1420.4
67.5°	1371.7	1346.9	1303.4	1269.2	1249.5
70°	1191.0	1171.3	1127.3	1093.2	1074.0
72.5°	1005.6	985.9	961.6	927.4	913.0
75°	819.7	810.4	785.5	756.5	766.4
77.5°	654.0	634.4	624.5	610.0	595.5
80°	488.3	483.1	473.3	458.8	449.0
82.5°	331.9	331.9	327.3	307.6	307.6
85°	199.9	195.2	190.5	175.5	170.9
87.5°	88.1	78.2	68.3	53.9	48.7
90°	2.4	28.0	76.1	71.5	73.9
92.5°	48.2	65.3	67.7	70.0	70.0
95°	113.5	135.3	139.2	139.2	135.3
97.5°	188.9	209.1	217.7	217.7	217.7
100°	276.0	293.8	300.0	300.0	297.7
102.5°	367.7	380.9	389.5	391.8	389.5
105°	468.0	474.2	478.8	482.7	482.7
107.5°	567.4	576.8	576.8	578.4	567.4
110°	663.9	676.3	676.3	676.3	670.1

TEST NUMBER: P917880

CATALOG NUMBER: DFN2DIP-SQ4F0-160D100US930-FLLFLL

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	768.0	781.2	778.9	772.7	768.0
115°	870.7	883.0	879.2	876.9	870.7
117.5°	972.5	989.6	978.7	972.5	966.2
120°	1075.1	1092.2	1075.1	1075.1	1068.1
122.5°	1168.3	1190.1	1179.2	1173.1	1168.3
125°	1266.3	1285.7	1279.5	1272.5	1270.2
127.5°	1362.0	1386.0	1377.4	1368.2	1362.0
130°	1451.3	1479.3	1475.4	1470.7	1462.2
132.5°	1551.6	1573.4	1574.9	1564.1	1557.8
135°	1637.9	1662.0	1666.6	1664.3	1658.1
137.5°	1734.3	1753.7	1757.6	1756.1	1746.7
140°	1819.0	1838.4	1849.3	1849.3	1840.8
142.5°	1906.1	1925.5	1931.7	1934.1	1925.5
145°	1988.4	2004.0	2016.5	2018.8	2010.2
147.5°	2062.3	2081.8	2091.1	2095.0	2086.4
150°	2138.5	2151.7	2160.3	2167.2	2160.3
152.5°	2206.1	2219.3	2230.2	2238.8	2230.2
155°	2273.8	2280.0	2287.0	2297.8	2290.8
157.5°	2332.1	2336.7	2340.6	2356.1	2345.3
160°	2384.2	2388.8	2391.1	2404.3	2395.0
162.5°	2432.4	2432.4	2434.6	2449.4	2438.6
165°	2473.5	2471.2	2471.2	2486.7	2475.9
167.5°	2510.9	2503.9	2503.9	2519.4	2508.5
170°	2538.8	2532.6	2530.3	2545.9	2532.6
172.5°	2558.2	2552.0	2549.7	2565.3	2552.0
175°	2573.8	2567.6	2563.0	2578.5	2565.3
177.5°	2582.4	2576.2	2571.5	2584.7	2571.5
180°	2578.5	2578.5	2578.5	2578.5	2578.5

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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	12.91	13.92	13.74	14.77	15.82	12.47	13.47	13.29	14.32	15.37
	3H	14.59	15.49	15.43	16.35	17.43	14.10	15.00	14.93	15.86	16.94
	4H	15.18	16.04	16.04	16.90	17.99	14.69	15.54	15.54	16.41	17.50
	6H	15.60	16.38	16.46	17.25	18.36	15.10	15.88	15.96	16.75	17.86
	8H	15.71	16.46	16.58	17.35	18.45	15.20	15.95	16.08	16.84	17.95
	12H	15.76	16.48	16.64	17.36	18.49	15.25	15.97	16.13	16.85	17.98
4H	2H	13.39	14.24	14.25	15.11	16.20	13.04	13.89	13.89	14.75	15.84
	3H	15.27	15.99	16.14	16.88	17.99	14.87	15.58	15.74	16.48	17.58
	4H	16.00	16.65	16.88	17.54	18.67	15.57	16.22	16.46	17.12	18.25
	6H	16.53	17.09	17.42	18.00	19.14	16.09	16.65	16.99	17.57	18.71
	8H	16.68	17.21	17.58	18.12	19.27	16.24	16.77	17.14	17.68	18.83
	12H	16.76	17.24	17.68	18.17	19.32	16.31	16.79	17.23	17.72	18.87
8H	4H	16.21	16.73	17.11	17.64	18.79	15.83	16.35	16.73	17.27	18.41
	6H	16.85	17.28	17.78	18.24	19.38	16.47	16.90	17.39	17.85	19.00
	8H	17.07	17.46	18.01	18.40	19.57	16.68	17.07	17.62	18.01	19.18
	12H	17.21	17.55	18.16	18.49	19.71	16.80	17.14	17.74	18.08	19.30
12H	4H	16.20	16.67	17.12	17.60	18.76	15.83	16.30	16.75	17.23	18.39
	6H	16.88	17.27	17.82	18.21	19.38	16.51	16.89	17.45	17.84	19.00
	8H	17.13	17.47	18.07	18.41	19.62	16.75	17.09	17.69	18.03	19.24