

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: P917877

Luminaire Tested: DFN2DIP-SQ4F0-160D090US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917877
REPORT IS A COMBINATION OF REPORTS P901649 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D090US930-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

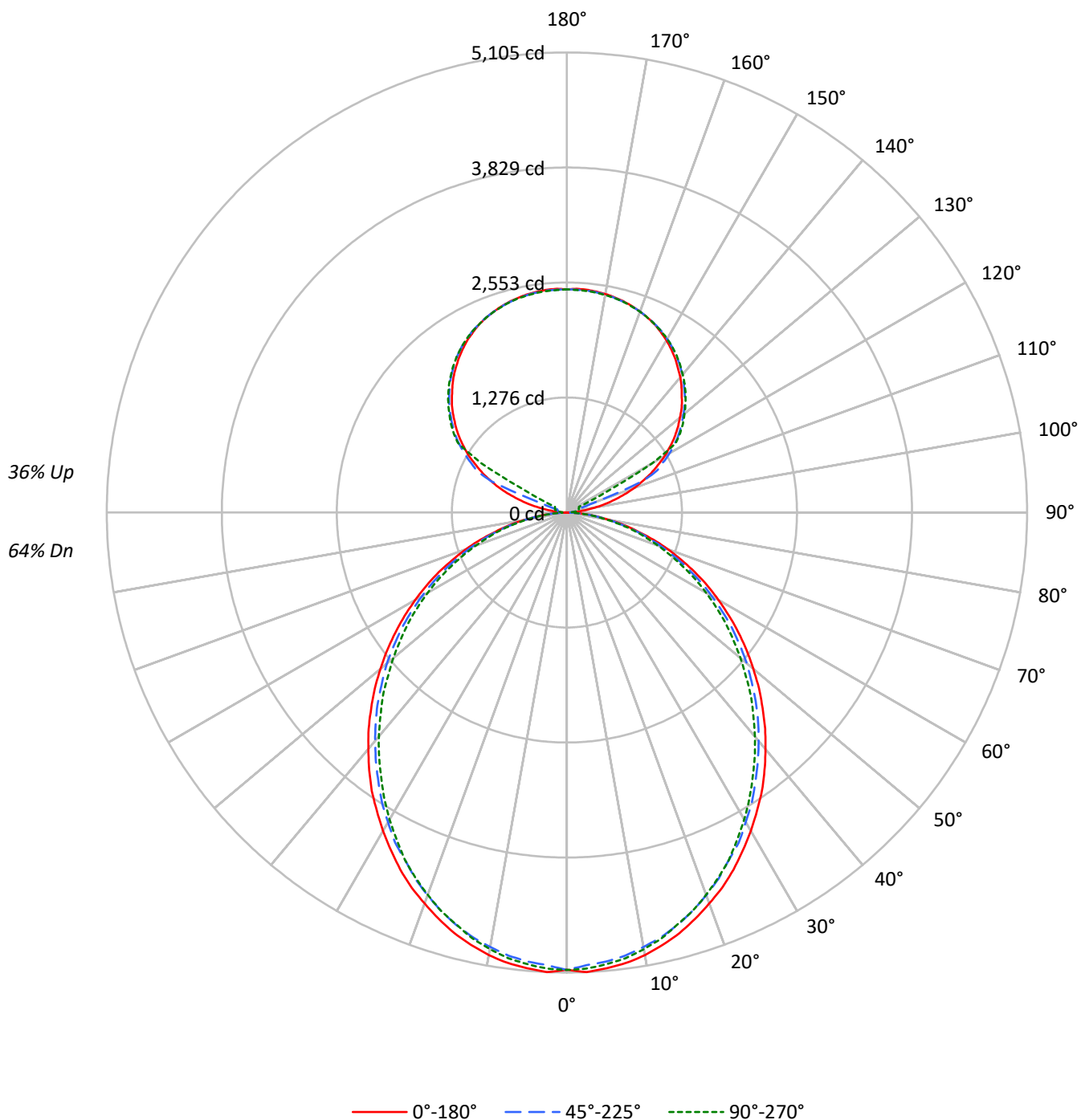
Lumens per Lamp: N/A
Luminaire Lumens: 20178.6 lumens
Efficiency: N/A
Efficacy: 86.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 233.4
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

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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	110	110	110	110	104	104	104	104	91	91	91	80	80	80	69	69	69
1	101	97	93	89	95	91	87	84	80	77	75	70	68	66	61	60	58
2	92	84	78	73	86	79	74	69	70	66	62	62	58	55	54	51	49
3	84	74	67	61	78	70	63	58	62	57	52	55	50	47	48	45	42
4	77	66	58	51	72	62	55	49	55	49	45	49	44	40	43	39	36
5	71	59	50	44	66	55	48	42	49	43	39	44	39	35	38	35	31
6	65	53	44	38	61	50	42	37	45	38	34	40	35	31	35	31	28
7	60	48	40	34	56	45	38	32	40	34	30	36	31	27	32	28	25
8	56	43	35	30	52	41	34	29	37	31	27	33	28	24	29	25	22
9	52	40	32	27	49	38	31	26	34	28	24	30	25	22	27	23	20
10	49	36	29	24	46	35	28	23	31	26	22	28	23	20	25	21	18

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

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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	4.1
80°-90°	224.9	1.1
90°-100°	81.7	0.4
100°-110°	304.4	1.5
110°-120°	807.3	4.0
120°-130°	1339.0	6.6
130°-140°	1422.3	7.0
140°-150°	1321.9	6.6
150°-160°	1062.8	5.3
160°-170°	684.8	3.4
170°-180°	235.7	1.2
0°-30°	3797.3	18.8
0°-40°	6091.6	30.2
0°-60°	10381.1	51.4
0°-90°	12918.7	64.0
90°-120°	1193.4	5.9
90°-150°	5276.6	26.1
90°-180°	7260.0	36.0
0°-180°	20178.6	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	22	36	45	48	19
95°	116	57	70	79	77	138
105°	545	599	109	129	136	582
115°	1030	1061	1106	276	147	1014
125°	1457	1480	1514	1527	1532	1299
135°	1803	1831	1847	1866	1862	1393
145°	2091	2089	2120	2132	2123	1308
155°	2303	2287	2308	2319	2304	1061
165°	2426	2416	2421	2433	2421	685
175°	2482	2469	2473	2485	2467	236
180°	2476	2476	2476	2476	2476	

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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°	1.7	21.5	35.7	44.9	48.3
92.5°	44.9	37.7	43.0	46.6	48.3
95°	116.4	57.2	69.8	78.9	77.0
97.5°	209.6	62.8	91.3	96.8	98.5
100°	317.2	71.7	102.2	116.4	120.0
102.5°	435.4	431.9	105.7	125.3	130.9
105°	544.7	598.6	109.3	129.0	136.2
107.5°	672.0	716.6	113.0	132.6	139.8
110°	793.9	831.4	313.6	134.4	141.5



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	908.6	940.7	910.3	137.9	143.4
115°	1030.3	1060.7	1105.6	276.0	147.0
117.5°	1136.0	1171.8	1202.4	946.1	476.6
120°	1254.3	1281.2	1313.5	1335.0	1093.1
122.5°	1354.6	1383.3	1419.3	1429.9	1431.8
125°	1456.7	1480.1	1514.2	1526.7	1532.0
127.5°	1549.9	1575.0	1602.1	1619.9	1621.6
130°	1637.8	1666.6	1686.1	1705.8	1704.2
132.5°	1727.4	1750.8	1770.3	1786.6	1784.9
135°	1802.7	1831.4	1847.4	1865.5	1861.9
137.5°	1881.5	1902.9	1921.0	1938.9	1933.6
140°	1958.4	1972.9	1992.5	2008.7	1999.8
142.5°	2023.2	2035.7	2058.9	2073.1	2064.3
145°	2091.2	2089.3	2119.8	2132.3	2123.4
147.5°	2150.2	2144.9	2175.3	2184.3	2177.2
150°	2207.7	2195.1	2223.8	2234.4	2225.5
152.5°	2255.9	2241.7	2268.5	2279.3	2266.8
155°	2302.6	2286.6	2308.0	2318.7	2304.4
157.5°	2340.2	2326.0	2342.1	2354.7	2340.2
160°	2372.5	2361.7	2372.5	2383.2	2370.6
162.5°	2401.1	2390.4	2399.3	2411.9	2395.8
165°	2426.2	2415.5	2420.9	2433.4	2420.9
167.5°	2446.0	2435.1	2440.6	2453.2	2437.0
170°	2462.1	2451.3	2454.9	2467.4	2451.3
172.5°	2472.8	2462.1	2465.7	2478.3	2462.1
175°	2481.7	2469.1	2472.8	2485.3	2467.4
177.5°	2485.3	2472.8	2474.7	2487.2	2471.1
180°	2476.4	2476.4	2476.4	2476.4	2476.4

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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	12.90	13.90	13.73	14.75	15.81	12.46	13.46	13.28	14.31	15.36
	3H	14.57	15.48	15.41	16.33	17.42	14.08	14.99	14.92	15.84	16.93
	4H	15.17	16.02	16.03	16.89	17.98	14.68	15.53	15.53	16.39	17.49
	6H	15.58	16.37	16.45	17.24	18.35	15.08	15.87	15.95	16.74	17.85
	8H	15.69	16.44	16.57	17.33	18.44	15.19	15.94	16.07	16.83	17.94
	12H	15.75	16.46	16.63	17.35	18.48	15.24	15.95	16.12	16.84	17.97
4H	2H	13.38	14.23	14.24	15.09	16.19	13.02	13.87	13.88	14.74	15.83
	3H	15.26	15.97	16.13	16.87	17.98	14.85	15.56	15.73	16.46	17.57
	4H	15.99	16.63	16.87	17.53	18.66	15.56	16.21	16.45	17.10	18.24
	6H	16.51	17.07	17.41	17.99	19.13	16.08	16.64	16.98	17.56	18.70
	8H	16.67	17.19	17.57	18.10	19.26	16.23	16.75	17.13	17.67	18.82
	12H	16.75	17.22	17.67	18.15	19.31	16.30	16.77	17.22	17.70	18.86
8H	4H	16.19	16.72	17.10	17.63	18.78	15.82	16.34	16.72	17.25	18.40
	6H	16.84	17.27	17.76	18.22	19.37	16.45	16.89	17.38	17.84	18.99
	8H	17.06	17.44	18.00	18.39	19.56	16.67	17.05	17.61	18.00	19.17
	12H	17.20	17.54	18.14	18.48	19.70	16.79	17.13	17.73	18.07	19.29
12H	4H	16.19	16.66	17.11	17.59	18.75	15.82	16.29	16.74	17.22	18.38
	6H	16.87	17.25	17.81	18.20	19.37	16.49	16.88	17.43	17.83	18.99
	8H	17.12	17.46	18.06	18.40	19.61	16.74	17.08	17.68	18.02	19.23