

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: P915061

Luminaire Tested: DFN2DIP-SQ4F0-110D160US927-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P915061
REPORT IS A COMBINATION OF REPORTS P901733 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-110D160US927-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

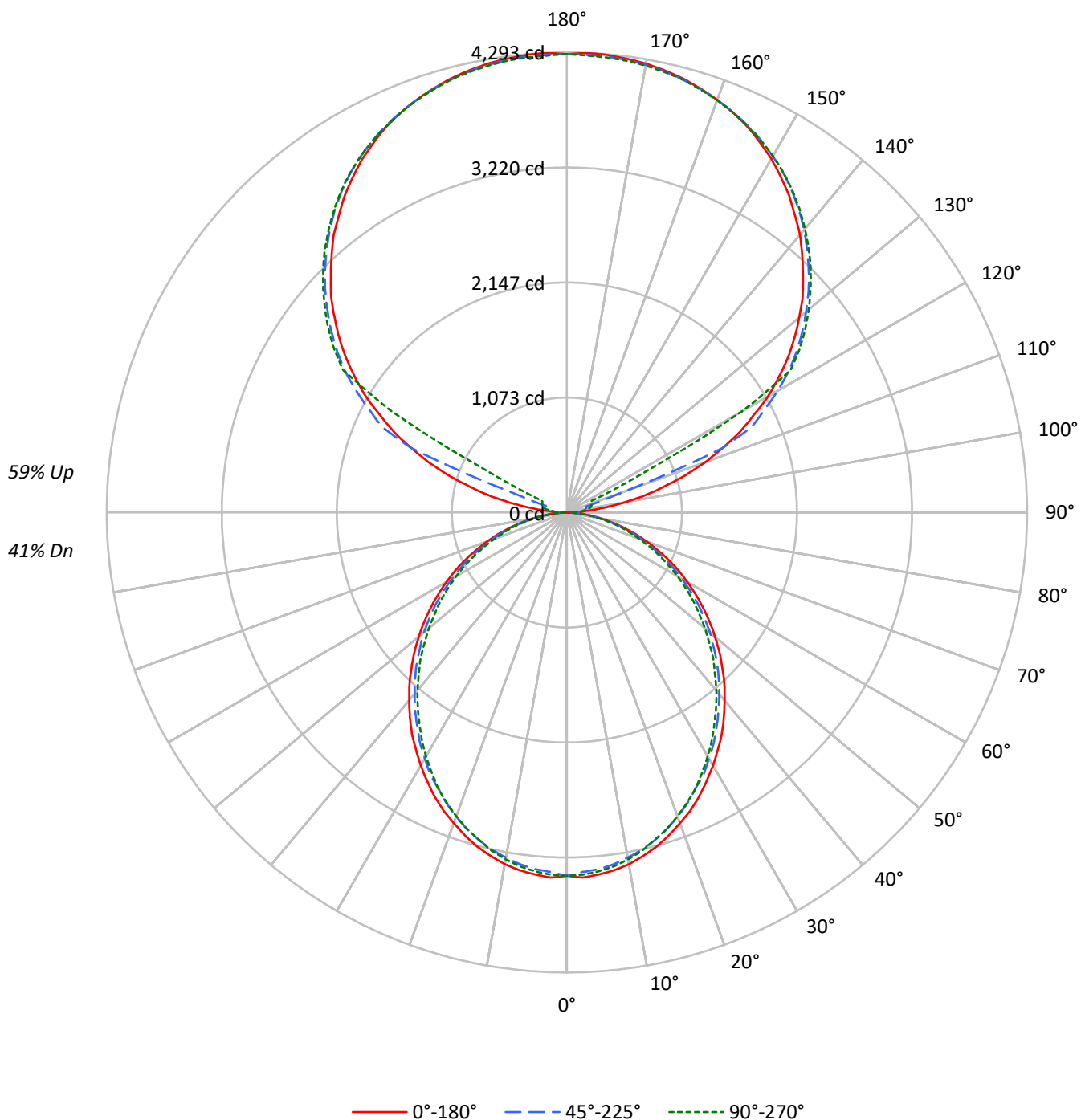
Lumens per Lamp: N/A
Luminaire Lumens: 21175.0 lumens
Efficiency: N/A
Efficacy: 93.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 227.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9951
Total Harmonic Distortion (THDi): 0.07
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	105	105	105	105	96	96	96	96	78	78	78	62	62	62	48	48	48
1	96	91	88	84	87	83	80	77	69	66	64	55	53	52	42	41	40
2	87	80	74	69	79	73	68	63	60	56	53	48	46	43	37	35	34
3	79	70	63	57	72	64	58	53	53	48	45	42	39	37	33	31	29
4	73	62	54	48	66	57	50	45	47	42	38	38	34	31	29	27	25
5	67	55	47	41	60	51	44	38	42	37	33	34	30	27	26	24	22
6	61	49	41	36	56	45	38	33	38	32	28	31	27	24	24	21	19
7	57	45	37	31	52	41	34	29	34	29	25	28	24	21	22	19	17
8	53	40	33	28	48	37	30	26	31	26	22	25	22	19	20	17	15
9	49	37	29	25	45	34	27	23	29	23	20	23	20	17	19	16	14
10	46	34	27	22	42	31	25	21	26	21	18	22	18	15	17	14	12

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2379	2379	2379
5°	2383	2346	2362
10°	2364	2315	2331
15°	2329	2278	2282
20°	2282	2225	2231
25°	2235	2162	2173
30°	2176	2104	2098
35°	2121	2035	2019
40°	2053	1965	1944
45°	1985	1895	1868
50°	1910	1822	1779
55°	1832	1737	1697
60°	1744	1637	1604
65°	1648	1533	1494
70°	1525	1405	1375
75°	1355	1254	1267
80°	1151	1061	1059
85°	833	725	712

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2292 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	319.1	1.5
10°-20°	897.9	4.2
20°-30°	1319.6	6.2
30°-40°	1532.6	7.2
40°-50°	1530.7	7.2
50°-60°	1334.7	6.3
60°-70°	986.7	4.7
70°-80°	558.2	2.6
80°-90°	154.9	0.7
90°-100°	141.0	0.7
100°-110°	525.8	2.5
110°-120°	1394.6	6.6
120°-130°	2313.0	10.9
130°-140°	2456.9	11.6
140°-150°	2283.4	10.8
150°-160°	1835.8	8.7
160°-170°	1182.9	5.6
170°-180°	407.2	1.9
0°-30°	2536.6	12.0
0°-40°	4069.2	19.2
0°-60°	6934.6	32.7
0°-90°	8634.4	40.8
90°-120°	2061.4	9.7
90°-150°	9114.7	43.0
90°-180°	12541.0	59.2
0°-180°	21175.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	3391	3391	3391	3391	3391	
5°	3391	3378	3342	3368	3362	322
15°	3228	3208	3166	3179	3163	909
25°	2921	2895	2840	2846	2840	1344
35°	2520	2488	2436	2416	2400	1574
45°	2051	2028	1979	1943	1930	1583
55°	1552	1532	1493	1454	1438	1388
65°	1047	1027	994	965	949	1035
75°	548	541	525	505	512	585
85°	134	130	127	117	114	149
90°	3	37	62	78	83	19
95°	201	99	121	136	133	238
105°	941	1034	189	223	235	1005
115°	1780	1832	1910	477	254	1752
125°	2516	2557	2616	2637	2646	2244
135°	3114	3164	3191	3222	3216	2405
145°	3612	3609	3662	3683	3668	2259
155°	3977	3950	3987	4005	3981	1833
165°	4191	4172	4182	4203	4182	1184
175°	4287	4265	4271	4293	4262	408
180°	4278	4278	4278	4278	4278	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	3390.7	3390.7	3390.7	3390.7	3390.7
2.5°	3410.3	3394.1	3358.1	3390.7	3384.4
5°	3390.7	3377.9	3341.9	3367.8	3361.6
7.5°	3367.8	3348.5	3312.5	3338.8	3332.2
10°	3332.2	3309.3	3270.3	3296.2	3286.5
12.5°	3283.1	3263.7	3224.7	3240.9	3234.3
15°	3227.7	3208.3	3165.8	3178.9	3162.7
17.5°	3159.2	3139.9	3097.3	3113.6	3097.3
20°	3084.2	3064.8	3019.2	3028.8	3016.1
22.5°	3009.5	2980.0	2937.5	2937.5	2930.9
25°	2921.2	2895.3	2840.0	2846.2	2840.0
27.5°	2823.3	2800.5	2758.3	2748.6	2732.4
30°	2725.8	2699.5	2650.7	2641.1	2627.9
32.5°	2621.3	2602.0	2549.7	2530.0	2516.8
35°	2520.3	2487.8	2435.6	2415.8	2399.6
37.5°	2406.2	2376.8	2324.6	2301.7	2285.4
40°	2288.9	2262.6	2210.4	2181.4	2168.2
42.5°	2174.8	2148.5	2096.6	2063.7	2044.4
45°	2051.0	2028.1	1978.9	1943.4	1930.2
47.5°	1930.2	1907.4	1855.1	1819.2	1799.8
50°	1802.9	1786.7	1741.0	1695.3	1679.1
52.5°	1679.1	1656.2	1614.1	1578.0	1555.2
55°	1552.1	1532.4	1493.3	1454.2	1438.0
57.5°	1424.8	1408.6	1366.0	1326.9	1313.8
60°	1297.5	1284.8	1239.1	1203.1	1193.4
62.5°	1173.7	1150.9	1118.3	1085.8	1072.7
65°	1046.7	1027.0	994.5	965.1	948.9
67.5°	916.3	899.8	870.7	847.9	834.7
70°	795.6	782.4	753.0	730.2	717.4
72.5°	671.8	658.6	642.4	619.6	609.8
75°	547.6	541.4	524.7	505.4	512.0
77.5°	436.9	423.7	417.2	407.5	397.8
80°	326.2	322.7	316.2	306.5	299.9
82.5°	221.7	221.7	218.6	205.5	205.5
85°	133.6	130.4	127.3	117.2	114.2
87.5°	58.8	52.2	45.6	36.0	32.5
90°	2.9	37.2	61.7	77.6	83.4
92.5°	77.6	65.0	74.2	80.5	83.4
95°	201.1	98.9	120.6	136.3	133.1
97.5°	362.0	108.4	157.6	167.2	170.2
100°	548.0	123.9	176.4	201.1	207.3
102.5°	752.0	746.2	182.7	216.5	226.0
105°	941.0	1034.0	188.9	222.8	235.2
107.5°	1160.7	1237.9	195.2	229.0	241.5
110°	1371.3	1436.1	541.8	232.3	244.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1569.5	1625.0	1572.4	238.2	247.7
115°	1779.7	1832.2	1909.8	476.7	254.0
117.5°	1962.4	2024.1	2077.1	1634.2	823.3
120°	2166.8	2213.0	2268.9	2306.0	1888.2
122.5°	2339.9	2389.5	2451.6	2469.9	2473.3
125°	2516.3	2556.7	2615.5	2637.3	2646.4
127.5°	2677.3	2720.7	2767.3	2798.2	2801.2
130°	2829.1	2878.7	2912.5	2946.7	2943.7
132.5°	2983.8	3024.2	3058.1	3086.0	3083.1
135°	3113.9	3163.6	3191.1	3222.4	3216.1
137.5°	3249.9	3287.1	3318.3	3349.2	3340.0
140°	3383.0	3408.0	3441.8	3469.8	3454.3
142.5°	3494.7	3516.4	3556.5	3581.1	3565.7
145°	3612.3	3609.0	3661.6	3683.2	3667.9
147.5°	3714.1	3705.0	3757.6	3773.0	3760.8
150°	3813.4	3791.7	3841.4	3859.7	3844.3
152.5°	3896.8	3872.2	3918.5	3937.3	3915.6
155°	3977.3	3949.7	3986.9	4005.3	3980.6
157.5°	4042.4	4017.8	4045.7	4067.4	4042.4
160°	4098.3	4079.5	4098.3	4116.6	4094.9
162.5°	4147.5	4129.2	4144.5	4166.2	4138.4
165°	4190.9	4172.5	4181.7	4203.4	4181.7
167.5°	4225.1	4206.3	4215.9	4237.5	4209.7
170°	4253.0	4234.3	4240.5	4262.2	4234.3
172.5°	4271.4	4253.0	4259.2	4280.9	4253.0
175°	4286.8	4265.1	4271.4	4293.1	4262.2
177.5°	4293.1	4271.4	4274.7	4296.4	4268.4
180°	4277.6	4277.6	4277.6	4277.6	4277.6

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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	9.38	10.16	10.41	11.20	12.60	8.93	9.72	9.97	10.76	12.15
	3H	11.04	11.74	12.08	12.79	14.20	10.55	11.25	11.59	12.30	13.71
	4H	11.62	12.29	12.68	13.34	14.76	11.13	11.80	12.18	12.85	14.27
	6H	12.02	12.64	13.09	13.69	15.13	11.52	12.14	12.59	13.19	14.63
	8H	12.13	12.71	13.20	13.78	15.21	11.63	12.21	12.70	13.28	14.71
	12H	12.18	12.73	13.25	13.79	15.25	11.67	12.22	12.74	13.28	14.74
4H	2H	9.83	10.50	10.89	11.55	12.97	9.48	10.14	10.54	11.19	12.62
	3H	11.69	12.25	12.76	13.33	14.76	11.29	11.84	12.36	12.92	14.36
	4H	12.41	12.92	13.48	13.99	15.45	11.98	12.49	13.06	13.56	15.02
	6H	12.92	13.36	14.01	14.45	15.91	12.49	12.93	13.57	14.02	15.47
	8H	13.07	13.48	14.16	14.57	16.04	12.64	13.05	13.72	14.13	15.60
	12H	13.15	13.52	14.25	14.61	16.09	12.70	13.07	13.80	14.16	15.64
8H	4H	12.60	13.01	13.68	14.09	15.56	12.22	12.63	13.31	13.72	15.18
	6H	13.23	13.57	14.34	14.70	16.16	12.85	13.19	13.96	14.31	15.78
	8H	13.46	13.75	14.57	14.86	16.34	13.06	13.36	14.18	14.47	15.95
	12H	13.59	13.85	14.70	14.95	16.47	13.18	13.44	14.29	14.54	16.06
12H	4H	12.58	12.95	13.68	14.05	15.52	12.21	12.58	13.32	13.68	15.15
	6H	13.26	13.56	14.37	14.67	16.15	12.89	13.19	14.00	14.30	15.78
	8H	13.50	13.76	14.62	14.87	16.39	13.12	13.38	14.24	14.49	16.01