

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: P912428

Luminaire Tested: DFN2DIP-SQ4F0-160D110US850-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P912428
REPORT IS A COMBINATION OF REPORTS P900165 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D110US850-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

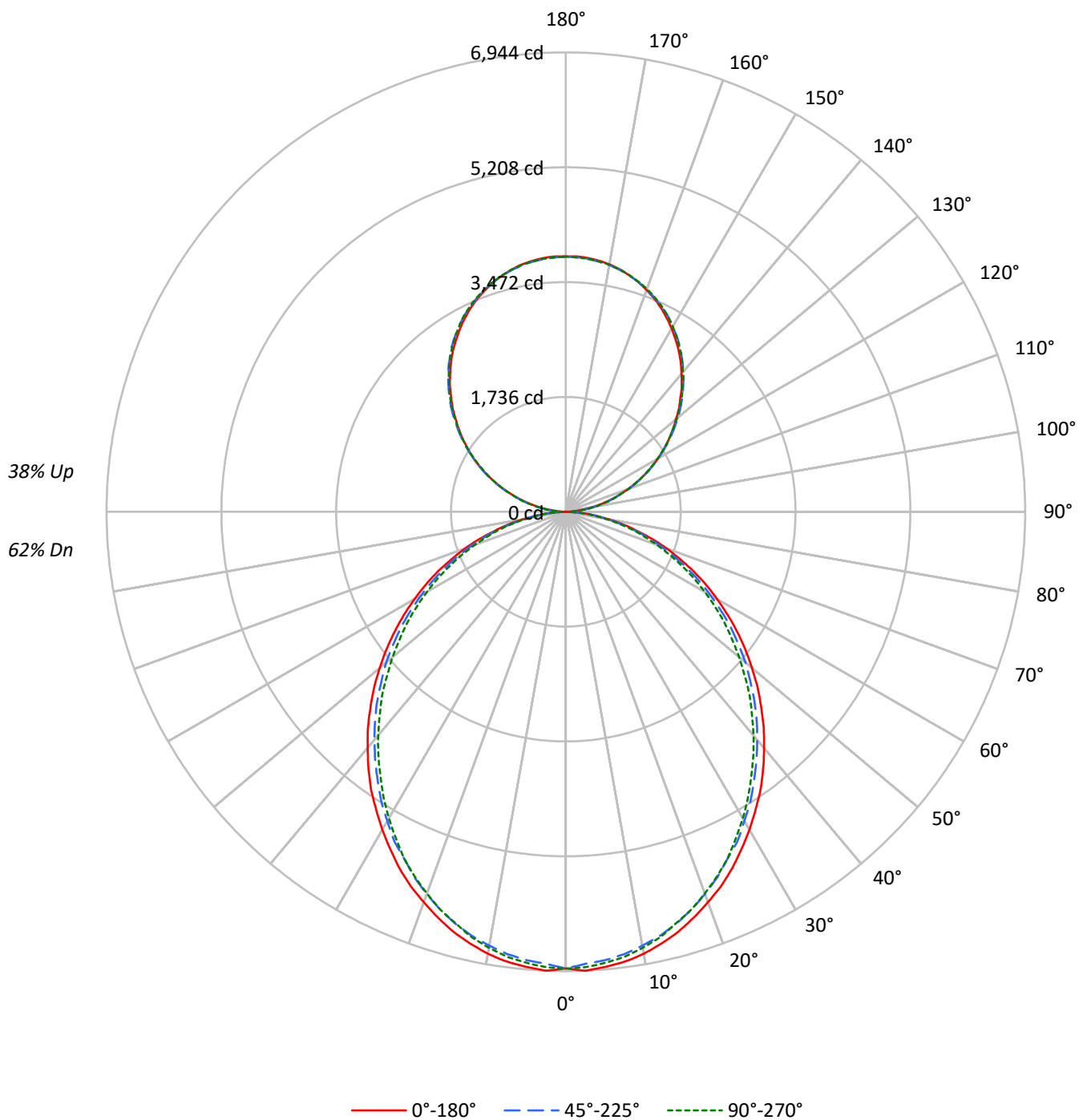
Lumens per Lamp: N/A
Luminaire Lumens: 28362.6 lumens
Efficiency: N/A
Efficacy: 113.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 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

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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	103	103	103	103	90	90	90	78	78	78	67	67	67
1	100	96	92	89	94	90	87	84	79	76	74	69	67	65	59	58	57
2	92	84	78	72	85	79	73	69	69	65	61	60	57	54	52	50	48
3	84	74	66	60	78	69	63	57	61	56	52	53	49	46	46	43	41
4	76	65	57	51	71	62	54	49	54	49	44	48	43	40	41	38	35
5	70	58	50	44	66	55	48	42	49	43	38	43	38	34	37	34	31
6	65	52	44	38	60	49	42	37	44	38	33	39	34	30	34	30	27
7	60	47	39	34	56	45	37	32	40	34	29	35	30	27	31	27	24
8	56	43	35	30	52	41	34	29	36	30	26	32	27	24	28	25	22
9	52	39	32	27	49	37	30	26	33	28	24	30	25	21	26	22	19
10	49	36	29	24	46	34	28	23	31	25	21	28	23	19	24	21	18

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4845	4845	4845
5°	4852	4778	4811
10°	4813	4715	4747
15°	4742	4638	4646
20°	4646	4531	4544
25°	4551	4403	4425
30°	4432	4284	4273
35°	4319	4143	4112
40°	4180	4002	3959
45°	4041	3859	3803
50°	3889	3710	3622
55°	3730	3538	3456
60°	3551	3332	3266
65°	3355	3120	3041
70°	3106	2862	2801
75°	2760	2553	2580
80°	2344	2159	2156
85°	1695	1477	1448

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4041 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	649.8	2.3
10°-20°	1828.4	6.4
20°-30°	2687.0	9.5
30°-40°	3120.8	11.0
40°-50°	3116.9	11.0
50°-60°	2717.8	9.6
60°-70°	2009.1	7.1
70°-80°	1136.7	4.0
80°-90°	311.0	1.1
90°-100°	238.7	0.8
100°-110°	758.6	2.7
110°-120°	1298.1	4.6
120°-130°	1707.2	6.0
130°-140°	1916.3	6.8
140°-150°	1879.1	6.6
150°-160°	1576.3	5.6
160°-170°	1045.4	3.7
170°-180°	365.4	1.3
0°-30°	5165.2	18.2
0°-40°	8286.0	29.2
0°-60°	14120.7	49.8
0°-90°	17577.5	62.0
90°-120°	2295.4	8.1
90°-150°	7798.0	27.5
90°-180°	10785.0	38.0
0°-180°	28362.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6904	6904	6904	6904	6904	
5°	6904	6878	6805	6858	6845	655
15°	6572	6533	6446	6473	6440	1851
25°	5948	5896	5783	5796	5783	2737
35°	5132	5066	4959	4919	4886	3205
45°	4176	4130	4030	3957	3930	3223
55°	3160	3120	3041	2961	2928	2826
65°	2131	2091	2025	1965	1932	2107
75°	1115	1102	1068	1029	1042	1190
85°	272	266	259	239	232	303
90°	3	42	114	107	110	27
95°	170	202	208	208	202	189
105°	700	710	716	722	722	739
115°	1303	1321	1316	1312	1303	1288
125°	1895	1924	1914	1904	1900	1693
135°	2451	2487	2494	2490	2481	1894
145°	2975	2998	3017	3021	3008	1859
155°	3402	3411	3422	3438	3428	1566
165°	3701	3698	3698	3721	3704	1044
175°	3851	3842	3835	3858	3838	366
180°	3858	3858	3858	3858	3858	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6904.3	6904.3	6904.3	6904.3	6904.3
2.5°	6944.4	6911.3	6838.1	6904.3	6891.5
5°	6904.3	6878.2	6804.9	6857.8	6845.1
7.5°	6857.8	6818.4	6745.0	6798.6	6785.2
10°	6785.2	6738.7	6659.2	6712.0	6692.3
12.5°	6685.3	6645.8	6566.2	6599.3	6585.9
15°	6572.5	6533.1	6446.4	6473.2	6440.1
17.5°	6433.1	6393.6	6307.0	6340.0	6307.0
20°	6280.2	6240.8	6147.7	6167.5	6141.4
22.5°	6128.1	6068.2	5981.5	5981.5	5968.2
25°	5948.5	5895.7	5782.9	5795.6	5782.9
27.5°	5749.1	5702.6	5616.6	5597.0	5563.9
30°	5550.4	5497.0	5397.6	5377.9	5351.1
32.5°	5337.7	5298.4	5191.9	5151.7	5125.0
35°	5132.1	5065.9	4959.4	4919.3	4886.3
37.5°	4899.7	4839.8	4733.4	4686.9	4653.8
40°	4660.8	4607.3	4501.0	4441.8	4415.0
42.5°	4428.5	4374.9	4269.2	4202.3	4162.9
45°	4176.3	4129.7	4029.8	3957.1	3930.4
47.5°	3930.4	3883.9	3777.6	3704.3	3664.9
50°	3671.2	3638.1	3545.1	3452.1	3419.0
52.5°	3419.0	3372.6	3286.6	3213.3	3166.9
55°	3160.5	3120.4	3040.8	2961.1	2928.1
57.5°	2901.4	2868.2	2781.6	2702.0	2675.2
60°	2642.1	2616.0	2523.1	2449.8	2430.0
62.5°	2389.9	2343.4	2277.2	2211.0	2184.3
65°	2131.4	2091.2	2025.0	1965.3	1932.1
67.5°	1865.9	1832.1	1773.0	1726.4	1699.7
70°	1620.0	1593.3	1533.4	1486.9	1460.9
72.5°	1367.8	1341.1	1308.1	1261.5	1241.9
75°	1115.0	1102.3	1068.5	1029.0	1042.5
77.5°	889.6	862.9	849.5	829.8	810.0
80°	664.2	657.2	643.8	624.0	610.7
82.5°	451.5	451.5	445.2	418.4	418.4
85°	271.9	265.5	259.2	238.8	232.4
87.5°	119.8	106.4	92.9	73.3	66.2
90°	3.4	41.9	114.0	107.0	110.5
92.5°	72.1	97.7	101.1	104.7	104.7
95°	169.8	202.4	208.2	208.2	202.4
97.5°	282.7	312.8	325.7	325.7	325.7
100°	412.9	439.6	448.9	448.9	445.5
102.5°	550.2	569.9	582.8	586.2	582.8
105°	700.2	709.5	716.5	722.3	722.3
107.5°	849.1	863.0	863.0	865.4	849.1
110°	993.3	1012.0	1012.0	1012.0	1002.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1149.1	1168.9	1165.4	1156.1	1149.1
115°	1302.7	1321.3	1315.5	1312.1	1302.7
117.5°	1455.1	1480.6	1464.3	1455.1	1445.8
120°	1608.6	1634.2	1608.6	1608.6	1598.2
122.5°	1748.2	1780.7	1764.4	1755.1	1748.2
125°	1894.7	1923.8	1914.5	1904.0	1900.5
127.5°	2037.8	2073.8	2061.1	2047.1	2037.8
130°	2171.5	2213.5	2207.6	2200.6	2187.8
132.5°	2321.6	2354.2	2356.5	2340.2	2330.9
135°	2450.7	2486.7	2493.7	2490.3	2480.9
137.5°	2594.9	2624.0	2629.8	2627.4	2613.6
140°	2721.7	2750.8	2767.1	2767.1	2754.3
142.5°	2852.0	2881.1	2890.4	2893.8	2881.1
145°	2975.2	2998.5	3017.1	3020.6	3007.8
147.5°	3085.8	3114.8	3128.8	3134.6	3121.8
150°	3199.8	3219.5	3232.3	3242.8	3232.3
152.5°	3300.9	3320.7	3337.0	3349.8	3337.0
155°	3402.2	3411.4	3421.9	3438.2	3427.7
157.5°	3489.4	3496.3	3502.1	3525.4	3509.1
160°	3567.3	3574.3	3577.7	3597.6	3583.6
162.5°	3639.4	3639.4	3643.0	3665.0	3648.7
165°	3701.1	3697.5	3697.5	3720.8	3704.5
167.5°	3756.8	3746.4	3746.4	3769.7	3753.4
170°	3798.8	3789.5	3786.0	3809.2	3789.5
172.5°	3827.8	3818.5	3815.1	3838.4	3818.5
175°	3851.1	3841.8	3834.8	3858.1	3838.4
177.5°	3863.9	3854.6	3847.6	3867.4	3847.6
180°	3858.1	3858.1	3858.1	3858.1	3858.1

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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	13.80	14.78	14.65	15.65	16.74	13.36	14.34	14.20	15.21	16.30
	3H	15.48	16.36	16.34	17.23	18.35	14.99	15.87	15.85	16.74	17.86
	4H	16.07	16.90	16.95	17.79	18.91	15.58	16.41	16.45	17.29	18.42
	6H	16.48	17.25	17.37	18.14	19.28	15.98	16.75	16.87	17.64	18.78
	8H	16.59	17.32	17.49	18.23	19.37	16.09	16.82	16.99	17.73	18.87
	12H	16.65	17.34	17.55	18.25	19.41	16.14	16.83	17.04	17.74	18.90
4H	2H	14.28	15.11	15.16	16.00	17.12	13.92	14.76	14.80	15.64	16.77
	3H	16.16	16.85	17.05	17.77	18.91	15.75	16.45	16.64	17.36	18.50
	4H	16.88	17.52	17.79	18.43	19.60	16.46	17.09	17.36	18.00	19.17
	6H	17.41	17.96	18.33	18.89	20.06	16.98	17.52	17.89	18.46	19.63
	8H	17.56	18.07	18.48	19.01	20.19	17.13	17.64	18.05	18.57	19.75
	12H	17.64	18.10	18.58	19.05	20.24	17.19	17.66	18.13	18.60	19.79
8H	4H	17.09	17.60	18.01	18.53	19.71	16.71	17.22	17.63	18.15	19.34
	6H	17.73	18.15	18.68	19.13	20.31	17.35	17.77	18.29	18.74	19.92
	8H	17.95	18.33	18.91	19.29	20.49	17.56	17.94	18.52	18.90	20.10
	12H	18.09	18.42	19.05	19.38	20.63	17.68	18.01	18.64	18.97	20.22
12H	4H	17.08	17.54	18.02	18.49	19.68	16.71	17.17	17.65	18.12	19.31
	6H	17.76	18.14	18.72	19.10	20.30	17.39	17.76	18.35	18.73	19.93
	8H	18.01	18.34	18.97	19.30	20.55	17.63	17.96	18.59	18.92	20.17