

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: P917898

Luminaire Tested: DFN2DIP-SQ4F0-160D160US930-RLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P917898
REPORT IS A COMBINATION OF REPORTS P900220 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D160US930-RLLFLL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

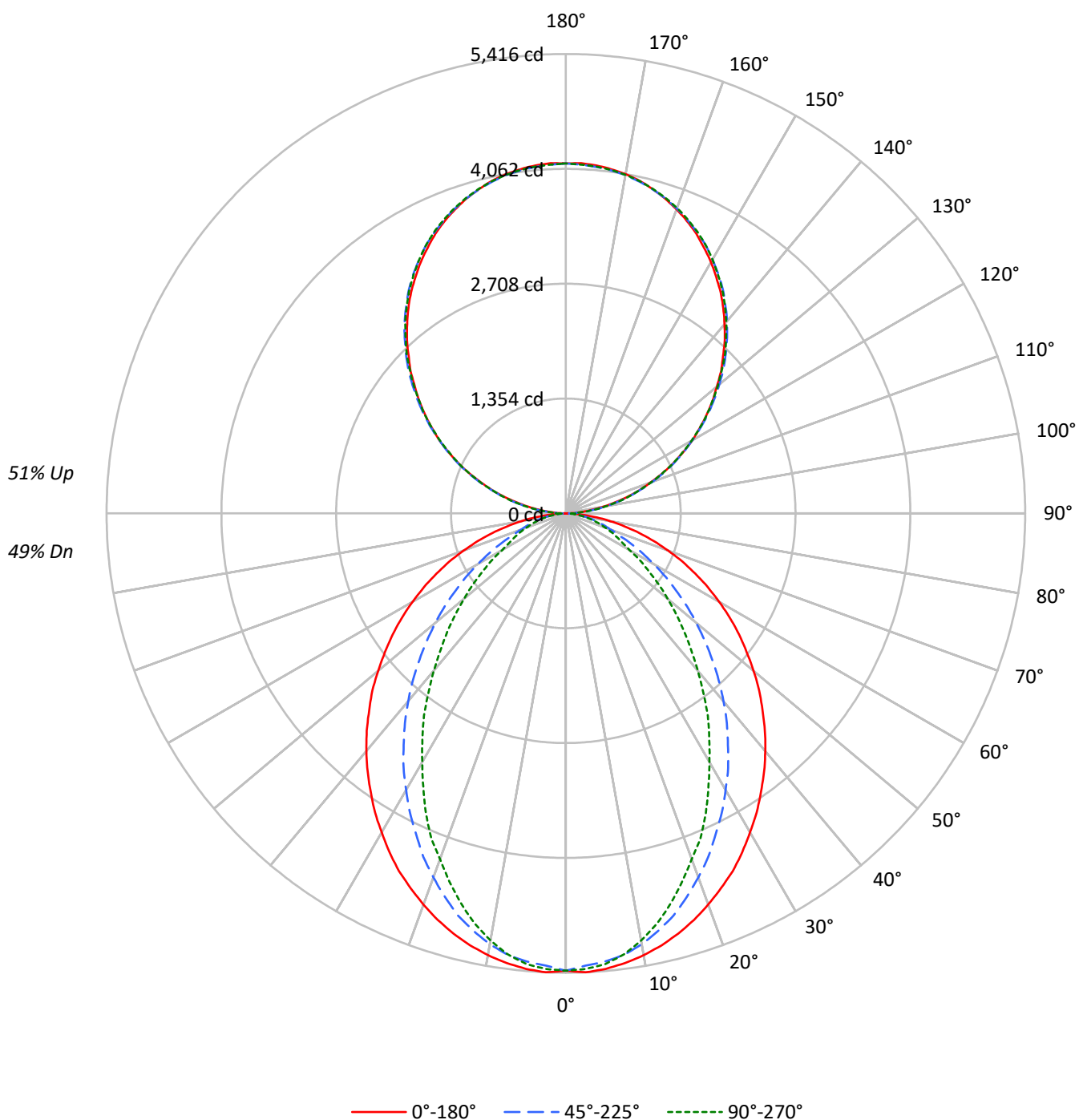
Lumens per Lamp: N/A
Luminaire Lumens: 22633.5 lumens
Efficiency: N/A
Efficacy: 78.4 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 288.8
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	107	107	107	107	99	99	99	99	83	83	83	68	68	68	55	55	55
1	98	94	90	87	90	87	84	81	73	71	69	61	59	58	50	49	48
2	90	83	77	72	82	76	71	67	65	61	58	54	51	49	44	42	41
3	82	73	66	60	75	68	61	57	58	53	49	48	45	42	40	37	35
4	75	65	57	51	69	60	54	48	51	46	42	43	40	36	36	33	31
5	69	58	50	44	64	54	47	42	46	41	37	39	35	32	32	29	27
6	64	52	44	39	59	49	42	37	42	36	32	35	31	28	30	26	24
7	59	47	40	34	55	44	37	32	38	33	29	32	28	25	27	24	22
8	55	43	36	30	51	40	33	29	35	29	26	30	26	23	25	22	20
9	51	39	32	27	47	37	30	26	32	27	23	27	23	20	23	20	18
10	48	36	29	24	44	34	28	23	30	24	21	25	21	19	22	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3783	3783	3783
5°	3789	3724	3748
10°	3751	3651	3627
15°	3700	3531	3439
20°	3631	3366	3209
25°	3561	3180	2986
30°	3467	2989	2704
35°	3375	2784	2455
40°	3282	2572	2170
45°	3173	2337	1912
50°	3060	2099	1659
55°	2942	1845	1417
60°	2806	1579	1167
65°	2650	1308	1052
70°	2460	1056	954
75°	2222	932	870
80°	1877	785	758
85°	1306	528	578

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3246 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	505.3	2.2
10°-20°	1387.1	6.1
20°-30°	1947.5	8.6
30°-40°	2122.9	9.4
40°-50°	1951.1	8.6
50°-60°	1532.3	6.8
60°-70°	997.4	4.4
70°-80°	513.4	2.3
80°-90°	142.8	0.6
90°-100°	255.3	1.1
100°-110°	811.2	3.6
110°-120°	1388.2	6.1
120°-130°	1825.7	8.1
130°-140°	2049.3	9.1
140°-150°	2009.6	8.9
150°-160°	1685.7	7.4
160°-170°	1117.9	4.9
170°-180°	390.8	1.7
0°-30°	3839.9	17.0
0°-40°	5962.7	26.3
0°-60°	9446.2	41.7
0°-90°	11099.8	49.0
90°-120°	2454.7	10.8
90°-150°	8339.3	36.8
90°-180°	11534.0	51.0
0°-180°	22633.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5391	5391	5391	5391	5391	
5°	5391	5367	5303	5347	5333	511
15°	5128	5074	4908	4816	4767	1445
25°	4655	4498	4176	3977	3903	2141
35°	4011	3762	3333	3025	2918	2510
45°	3279	2952	2440	2093	1976	2532
55°	2493	2112	1586	1293	1200	2228
65°	1683	1288	849	683	668	1669
75°	898	556	390	356	352	949
85°	210	107	93	93	93	241
90°	4	45	122	114	118	22
95°	182	216	223	223	216	202
105°	749	759	766	772	772	790
115°	1393	1413	1407	1403	1393	1378
125°	2026	2057	2047	2036	2032	1811
135°	2621	2659	2667	2663	2653	2026
145°	3182	3207	3226	3230	3217	1988
155°	3638	3648	3659	3677	3666	1675
165°	3958	3954	3954	3979	3962	1117
175°	4118	4108	4101	4126	4105	391
180°	4126	4126	4126	4126	4126	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5391.4	5391.4	5391.4	5391.4	5391.4
2.5°	5415.7	5391.4	5337.5	5386.8	5376.9
5°	5391.4	5367.0	5303.4	5347.4	5332.9
7.5°	5347.4	5318.4	5250.0	5269.2	5244.9
10°	5288.9	5254.8	5157.4	5142.4	5113.4
12.5°	5215.9	5171.9	5039.9	5010.9	4957.1
15°	5127.9	5074.1	4908.4	4815.7	4767.0
17.5°	5025.4	4947.2	4742.3	4635.1	4556.9
20°	4908.4	4810.6	4566.7	4445.1	4337.5
22.5°	4781.6	4669.2	4386.1	4220.5	4147.4
25°	4654.8	4498.4	4176.4	3976.6	3903.2
27.5°	4503.6	4337.5	3981.3	3752.0	3639.7
30°	4342.6	4156.8	3766.4	3518.0	3386.0
32.5°	4186.3	3961.6	3562.0	3269.0	3146.8
35°	4010.8	3761.8	3332.7	3025.2	2917.5
37.5°	3840.0	3571.3	3117.9	2780.8	2659.2
40°	3659.3	3366.9	2893.2	2546.8	2420.0
42.5°	3474.0	3161.8	2669.0	2307.7	2186.1
45°	3278.8	2951.7	2439.7	2092.9	1975.9
47.5°	3093.5	2747.2	2220.2	1873.4	1766.3
50°	2888.5	2542.2	2005.4	1668.4	1566.4
52.5°	2688.2	2322.2	1800.4	1478.5	1385.8
55°	2493.0	2112.5	1585.6	1293.1	1200.4
57.5°	2293.2	1902.9	1395.6	1122.3	1044.1
60°	2088.2	1697.9	1195.2	946.8	868.6
62.5°	1888.4	1498.1	1024.4	790.4	751.6
65°	1683.4	1287.9	849.0	683.3	668.3
67.5°	1488.2	1092.7	683.3	600.0	585.5
70°	1283.3	902.8	565.8	517.1	497.5
72.5°	1088.1	726.8	473.1	434.3	424.4
75°	897.6	556.0	390.3	356.1	351.5
77.5°	707.6	394.9	307.4	287.8	278.0
80°	531.7	283.2	234.0	214.8	214.8
82.5°	370.6	190.5	161.0	151.2	151.2
85°	209.6	107.1	92.7	92.7	92.7
87.5°	78.2	38.8	38.8	34.2	34.2
90°	3.8	44.8	121.9	114.5	118.1
92.5°	77.1	104.5	108.2	111.9	111.9
95°	181.6	216.5	222.7	222.7	216.5
97.5°	302.2	334.6	348.3	348.3	348.3
100°	441.6	470.2	480.1	480.1	476.4
102.5°	588.3	609.5	623.1	626.9	623.1
105°	748.8	758.7	766.2	772.4	772.4
107.5°	908.0	922.9	922.9	925.4	908.0
110°	1062.3	1082.1	1082.1	1082.1	1072.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1228.9	1250.1	1246.3	1236.4	1228.9
115°	1393.1	1413.0	1406.8	1403.0	1393.1
117.5°	1556.1	1583.4	1566.0	1556.1	1546.1
120°	1720.3	1747.6	1720.3	1720.3	1709.0
122.5°	1869.5	1904.4	1886.9	1877.0	1869.5
125°	2026.3	2057.3	2047.4	2036.2	2032.5
127.5°	2179.2	2217.8	2204.1	2189.2	2179.2
130°	2322.3	2367.1	2360.9	2353.4	2339.7
132.5°	2482.7	2517.6	2520.0	2502.6	2492.7
135°	2620.8	2659.3	2666.8	2663.1	2653.1
137.5°	2775.0	2806.1	2812.4	2809.8	2794.9
140°	2910.6	2941.7	2959.1	2959.1	2945.4
142.5°	3049.9	3081.0	3091.0	3094.7	3081.0
145°	3181.8	3206.6	3226.5	3230.3	3216.6
147.5°	3299.9	3331.1	3346.0	3352.2	3338.5
150°	3421.8	3443.0	3456.7	3467.9	3456.7
152.5°	3530.1	3551.2	3568.6	3582.3	3568.6
155°	3638.3	3648.2	3659.4	3676.8	3665.7
157.5°	3731.5	3739.0	3745.2	3770.1	3752.7
160°	3814.9	3822.4	3826.1	3847.2	3832.3
162.5°	3892.0	3892.0	3895.7	3919.4	3901.9
165°	3957.9	3954.2	3954.2	3979.1	3961.7
167.5°	4017.6	4006.5	4006.5	4031.3	4013.9
170°	4062.4	4052.4	4048.8	4073.6	4052.4
172.5°	4093.5	4083.6	4079.8	4104.7	4083.6
175°	4118.4	4108.5	4101.0	4125.9	4104.7
177.5°	4132.1	4122.1	4114.6	4135.8	4114.6
180°	4125.9	4125.9	4125.9	4125.9	4125.9

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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	11.69	12.51	12.66	13.49	14.78	7.65	8.47	8.62	9.45	10.74
	3H	13.37	14.11	14.35	15.10	16.41	8.84	9.58	9.82	10.57	11.88
	4H	13.98	14.68	14.98	15.67	16.99	9.29	9.99	10.29	10.98	12.30
	6H	14.41	15.05	15.41	16.05	17.38	9.61	10.25	10.62	11.25	12.58
	8H	14.54	15.14	15.55	16.16	17.49	9.70	10.31	10.71	11.33	12.65
	12H	14.60	15.18	15.62	16.19	17.54	9.75	10.32	10.76	11.33	12.68
4H	2H	11.71	12.40	12.71	13.40	14.72	8.25	8.94	9.25	9.94	11.26
	3H	13.54	14.12	14.55	15.14	16.47	9.60	10.18	10.61	11.20	12.53
	4H	14.24	14.76	15.25	15.78	17.13	10.15	10.67	11.17	11.69	13.05
	6H	14.75	15.21	15.78	16.25	17.60	10.57	11.02	11.60	12.06	13.41
	8H	14.93	15.36	15.96	16.39	17.75	10.70	11.12	11.73	12.15	13.52
	12H	15.03	15.41	16.08	16.46	17.83	10.76	11.14	11.81	12.19	13.56
8H	4H	14.20	14.63	15.23	15.66	17.02	10.43	10.85	11.46	11.88	13.25
	6H	14.77	15.12	15.83	16.20	17.56	10.95	11.30	12.00	12.37	13.74
	8H	14.99	15.30	16.06	16.36	17.74	11.14	11.45	12.20	12.51	13.89
	12H	15.13	15.41	16.20	16.46	17.88	11.26	11.53	12.32	12.58	14.01
12H	4H	14.15	14.54	15.20	15.58	16.96	10.43	10.82	11.48	11.86	13.23
	6H	14.75	15.06	15.81	16.12	17.50	11.00	11.31	12.06	12.37	13.75
	8H	14.97	15.24	16.04	16.30	17.72	11.21	11.48	12.27	12.53	13.96

END OF REPORT