

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: P920588

Luminaire Tested: DFN2DIP-SQ4F0-140D160US935-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P920588
REPORT IS A COMBINATION OF REPORTS P900217 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D160US935-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

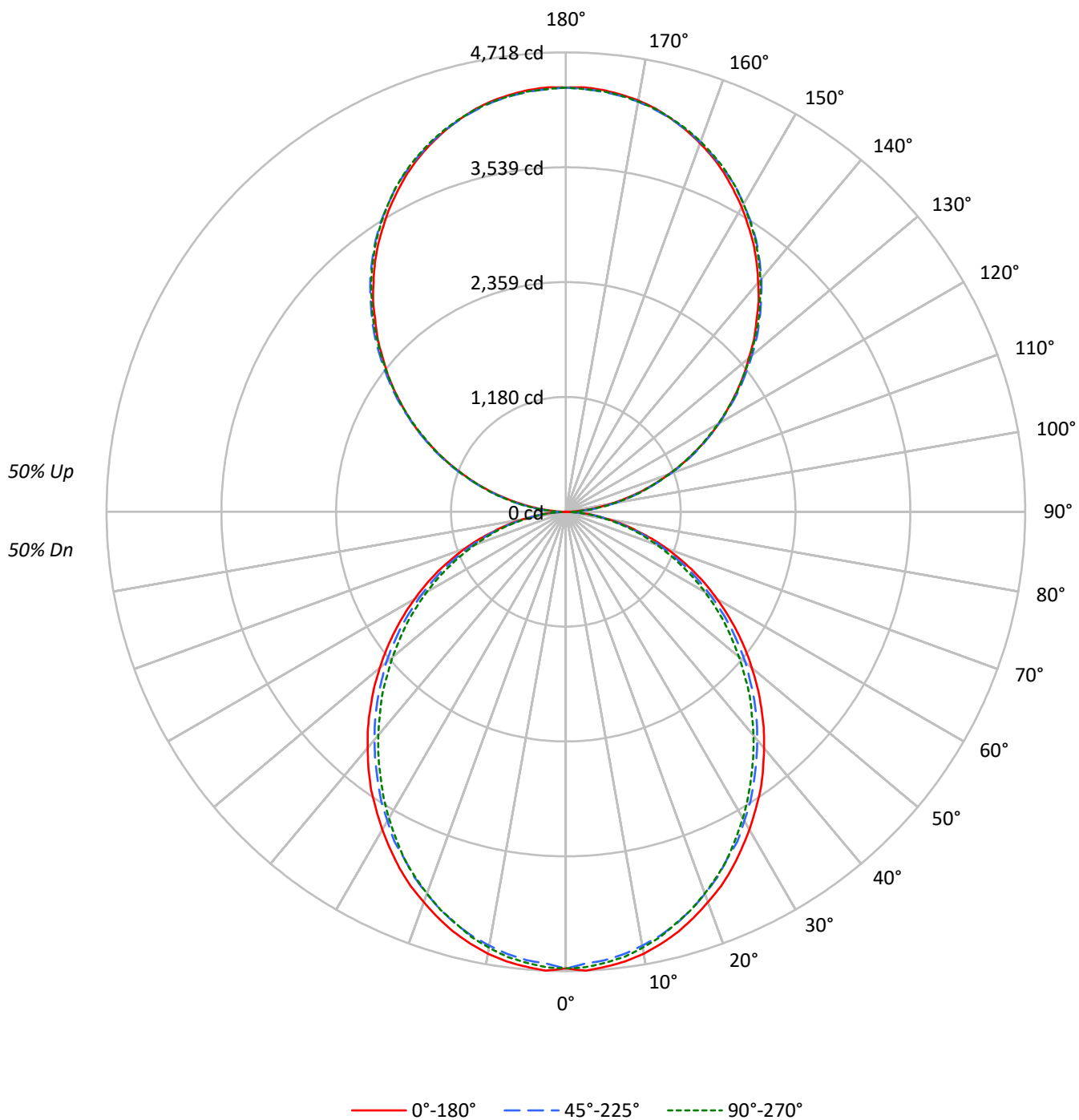
Lumens per Lamp: N/A
Luminaire Lumens: 24126.0 lumens
Efficiency: N/A
Efficacy: 90.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 265.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
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	69	69	69	56	56	56
1	98	93	89	86	90	86	83	80	73	70	68	61	59	57	49	48	47
2	89	82	75	70	82	75	70	66	64	60	56	53	50	48	43	41	40
3	81	72	64	58	74	66	60	55	56	51	47	47	43	40	38	36	34
4	74	63	56	49	68	59	52	46	50	45	40	42	38	35	34	31	29
5	68	57	48	42	63	52	45	40	45	39	35	38	33	30	31	28	25
6	63	51	43	37	58	47	40	35	40	35	30	34	30	26	28	25	22
7	58	46	38	32	53	43	35	30	37	31	27	31	27	23	26	22	20
8	54	42	34	28	50	39	32	27	33	28	24	28	24	21	24	20	18
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	18	16
10	47	35	28	23	43	33	26	22	28	23	19	24	20	17	20	17	15

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3291	3291	3291
5°	3296	3246	3268
10°	3269	3203	3225
15°	3221	3151	3156
20°	3156	3078	3087
25°	3092	2991	3006
30°	3011	2910	2902
35°	2934	2815	2793
40°	2839	2718	2690
45°	2745	2622	2584
50°	2642	2520	2461
55°	2534	2403	2348
60°	2412	2264	2219
65°	2279	2120	2066
70°	2110	1944	1903
75°	1875	1734	1753
80°	1593	1467	1464
85°	1151	1004	984

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3430 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	441.4	1.8
10°-20°	1242.1	5.1
20°-30°	1825.4	7.6
30°-40°	2120.0	8.8
40°-50°	2117.4	8.8
50°-60°	1846.3	7.7
60°-70°	1364.8	5.7
70°-80°	772.2	3.2
80°-90°	216.2	0.9
90°-100°	269.6	1.1
100°-110°	856.6	3.6
110°-120°	1466.0	6.1
120°-130°	1928.1	8.0
130°-140°	2164.2	9.0
140°-150°	2122.2	8.8
150°-160°	1780.2	7.4
160°-170°	1180.6	4.9
170°-180°	412.7	1.7
0°-30°	3508.9	14.5
0°-40°	5628.9	23.3
0°-60°	9592.6	39.8
0°-90°	11945.8	49.5
90°-120°	2592.3	10.7
90°-150°	8806.7	36.5
90°-180°	12180.0	50.5
0°-180°	24126.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4690	4690	4690	4690	4690	
5°	4690	4672	4623	4659	4650	445
15°	4465	4438	4379	4398	4375	1257
25°	4041	4005	3928	3937	3928	1859
35°	3486	3441	3369	3342	3319	2177
45°	2837	2806	2738	2688	2670	2189
55°	2147	2120	2066	2012	1989	1920
65°	1448	1421	1376	1335	1312	1432
75°	758	749	726	699	708	809
85°	185	180	176	162	158	206
90°	4	47	129	121	125	23
95°	192	229	235	235	229	213
105°	791	801	809	816	816	834
115°	1471	1492	1486	1482	1471	1455
125°	2140	2173	2162	2150	2146	1912
135°	2768	2808	2816	2812	2802	2139
145°	3360	3386	3407	3411	3397	2099
155°	3842	3853	3864	3883	3871	1768
165°	4180	4176	4176	4202	4184	1179
175°	4349	4339	4331	4357	4335	413
180°	4357	4357	4357	4357	4357	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4690.3	4690.3	4690.3	4690.3	4690.3
2.5°	4717.5	4695.0	4645.3	4690.3	4681.7
5°	4690.3	4672.5	4622.8	4658.7	4650.1
7.5°	4658.7	4631.9	4582.1	4618.5	4609.4
10°	4609.4	4577.8	4523.8	4559.7	4546.2
12.5°	4541.4	4514.6	4460.6	4483.0	4474.0
15°	4464.9	4438.1	4379.2	4397.5	4374.9
17.5°	4370.2	4343.4	4284.5	4307.0	4284.5
20°	4266.3	4239.6	4176.4	4189.8	4172.1
22.5°	4162.9	4122.3	4063.4	4063.4	4054.4
25°	4040.9	4005.0	3928.5	3937.1	3928.5
27.5°	3905.5	3874.0	3815.6	3802.2	3779.7
30°	3770.6	3734.2	3666.7	3653.4	3635.1
32.5°	3626.1	3599.3	3527.0	3499.8	3481.5
35°	3486.4	3441.4	3369.1	3341.9	3319.3
37.5°	3328.4	3287.8	3215.5	3184.0	3161.4
40°	3166.2	3129.9	3057.6	3017.5	2999.2
42.5°	3008.3	2972.0	2900.2	2854.7	2827.9
45°	2837.0	2805.5	2737.5	2688.2	2670.0
47.5°	2670.0	2638.4	2566.2	2516.4	2489.7
50°	2494.0	2471.5	2408.3	2345.1	2322.6
52.5°	2322.6	2291.0	2232.7	2182.9	2151.4
55°	2147.1	2119.8	2065.7	2011.6	1989.2
57.5°	1970.9	1948.4	1889.6	1835.6	1817.3
60°	1794.8	1777.2	1714.0	1664.2	1650.8
62.5°	1623.6	1592.0	1547.0	1502.0	1483.8
65°	1447.9	1420.6	1375.7	1335.0	1312.5
67.5°	1267.6	1244.6	1204.4	1172.8	1154.6
70°	1100.5	1082.4	1041.7	1010.1	992.4
72.5°	929.3	911.0	888.5	857.0	843.6
75°	757.5	748.9	725.9	699.1	708.2
77.5°	604.3	586.2	577.0	563.7	550.3
80°	451.2	446.4	437.4	424.0	414.8
82.5°	306.7	306.7	302.4	284.2	284.2
85°	184.7	180.4	176.1	162.2	157.9
87.5°	81.4	72.2	63.2	49.8	44.9
90°	4.0	47.3	128.7	120.9	124.8
92.5°	81.5	110.4	114.3	118.2	118.2
95°	191.7	228.6	235.1	235.1	228.6
97.5°	319.2	353.4	367.8	367.8	367.8
100°	466.3	496.5	507.0	507.0	503.1
102.5°	621.3	643.7	658.1	662.0	658.1
105°	790.7	801.2	809.2	815.7	815.7
107.5°	958.9	974.6	974.6	977.3	958.9
110°	1121.8	1142.8	1142.8	1142.8	1132.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1297.8	1320.2	1316.2	1305.7	1297.8
115°	1471.2	1492.2	1485.7	1481.7	1471.2
117.5°	1643.3	1672.1	1653.8	1643.3	1632.8
120°	1816.7	1845.5	1816.7	1816.7	1804.8
122.5°	1974.3	2011.1	1992.7	1982.2	1974.3
125°	2139.8	2172.6	2162.1	2150.3	2146.4
127.5°	2301.4	2342.1	2327.6	2311.9	2301.4
130°	2452.5	2499.7	2493.2	2485.3	2470.8
132.5°	2621.9	2658.7	2661.3	2642.9	2632.4
135°	2767.7	2808.4	2816.3	2812.4	2801.9
137.5°	2930.6	2963.4	2970.0	2967.3	2951.6
140°	3073.8	3106.6	3125.0	3125.0	3110.5
142.5°	3220.9	3253.7	3264.2	3268.2	3253.7
145°	3360.1	3386.4	3407.4	3411.4	3396.9
147.5°	3484.9	3517.8	3533.5	3540.1	3525.6
150°	3613.6	3636.0	3650.5	3662.3	3650.5
152.5°	3727.9	3750.2	3768.7	3783.1	3768.7
155°	3842.2	3852.7	3864.5	3882.9	3871.1
157.5°	3940.7	3948.6	3955.2	3981.4	3963.1
160°	4028.7	4036.6	4040.6	4062.9	4047.1
162.5°	4110.1	4110.1	4114.1	4139.1	4120.6
165°	4179.8	4175.8	4175.8	4202.1	4183.8
167.5°	4242.8	4231.0	4231.0	4257.3	4238.9
170°	4290.1	4279.6	4275.7	4302.0	4279.6
172.5°	4323.0	4312.5	4308.5	4334.8	4312.5
175°	4349.2	4338.7	4330.8	4357.2	4334.8
177.5°	4363.7	4353.2	4345.3	4367.7	4345.3
180°	4357.2	4357.2	4357.2	4357.2	4357.2

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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	11.38	12.23	12.34	13.21	14.49	10.93	11.79	11.89	12.77	14.04
	3H	13.04	13.81	14.01	14.79	16.10	12.55	13.32	13.52	14.30	15.60
	4H	13.63	14.36	14.62	15.35	16.66	13.14	13.86	14.12	14.85	16.16
	6H	14.03	14.70	15.03	15.70	17.02	13.53	14.20	14.53	15.20	16.52
	8H	14.14	14.78	15.14	15.79	17.11	13.64	14.28	14.64	15.29	16.61
	12H	14.19	14.80	15.20	15.80	17.15	13.68	14.29	14.69	15.29	16.64
4H	2H	11.84	12.56	12.83	13.55	14.86	11.48	12.21	12.47	13.20	14.51
	3H	13.71	14.32	14.71	15.33	16.66	13.30	13.91	14.30	14.93	16.25
	4H	14.43	14.98	15.43	15.99	17.34	14.00	14.56	15.01	15.57	16.91
	6H	14.94	15.42	15.96	16.46	17.80	14.51	14.99	15.53	16.03	17.37
	8H	15.10	15.54	16.12	16.57	17.93	14.66	15.11	15.68	16.13	17.49
	12H	15.17	15.58	16.21	16.62	17.98	14.72	15.13	15.76	16.17	17.53
8H	4H	14.62	15.07	15.64	16.10	17.45	14.25	14.69	15.27	15.72	17.08
	6H	15.26	15.63	16.30	16.70	18.05	14.87	15.24	15.92	16.31	17.67
	8H	15.48	15.81	16.54	16.86	18.24	15.09	15.41	16.14	16.47	17.84
	12H	15.62	15.90	16.67	16.95	18.37	15.20	15.49	16.26	16.54	17.96
12H	4H	14.61	15.01	15.65	16.05	17.42	14.24	14.64	15.28	15.69	17.05
	6H	15.29	15.61	16.34	16.67	18.04	14.92	15.24	15.97	16.30	17.67
	8H	15.53	15.82	16.59	16.87	18.29	15.15	15.44	16.21	16.49	17.91