

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: P923256

Luminaire Tested: DFN2DIP-SQ4F0-120D080US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923256
REPORT IS A COMBINATION OF REPORTS P900107 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-120D080US940-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

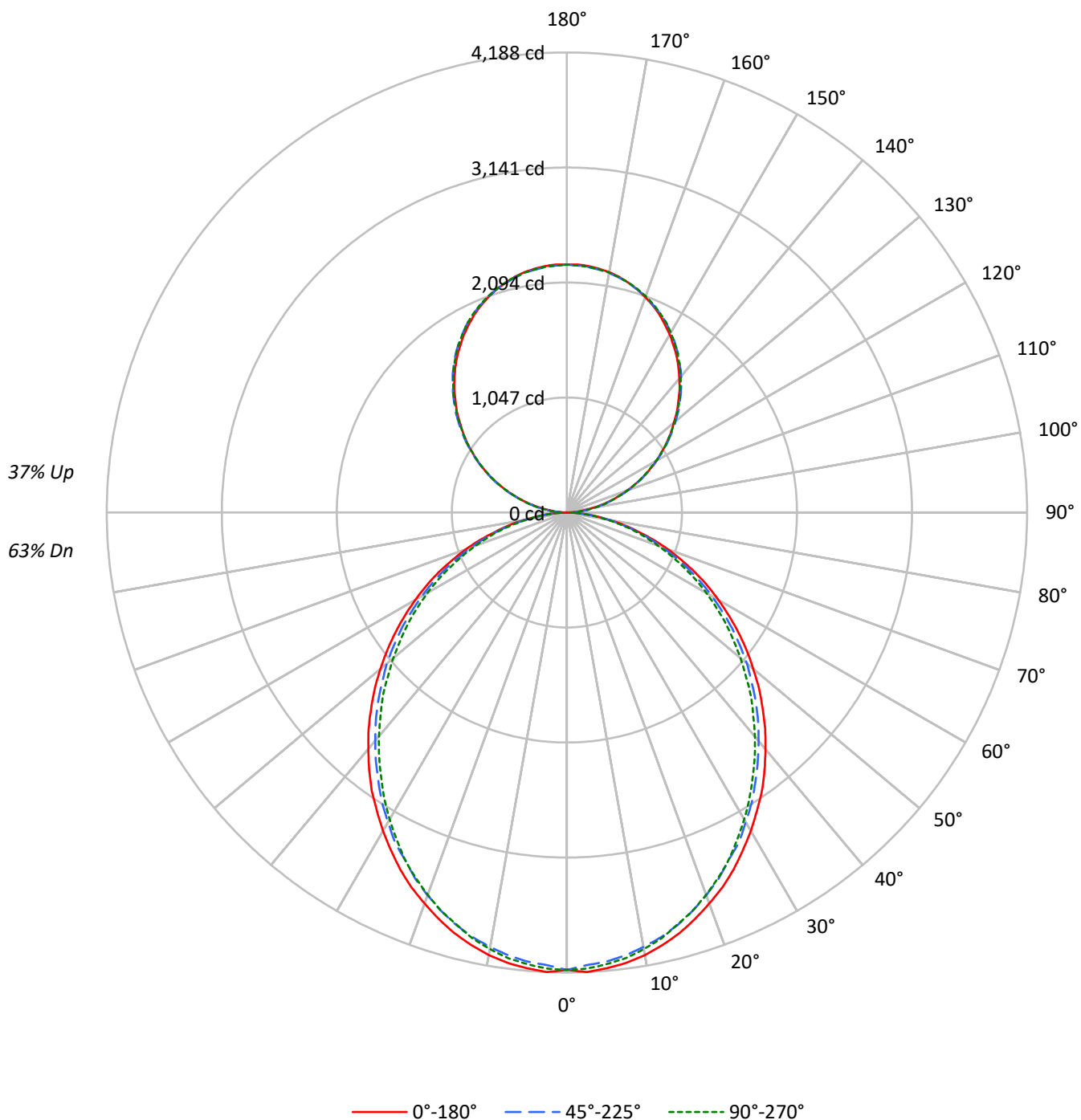
Lumens per Lamp: N/A
Luminaire Lumens: 16906.8 lumens
Efficiency: N/A
Efficacy: 95.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 177.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9933
Total Harmonic Distortion (THDi): 0.066
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
RCR																	
0	110	110	110	110	103	103	103	103	90	90	90		79	79	79		68
1	101	96	92	89	94	90	87	84	79	77	74		69	67	66		60
2	92	84	78	72	86	79	73	69	70	65	62		61	58	55		53
3	84	74	66	60	78	70	63	58	61	56	52		54	50	46		47
4	77	66	57	51	71	62	54	49	55	49	44		48	43	40		42
5	70	58	50	44	66	55	48	42	49	43	38		43	38	35		38
6	65	53	44	38	61	50	42	37	44	38	33		39	34	30		34
7	60	48	39	34	56	45	38	32	40	34	30		36	31	27		31
8	56	43	35	30	52	41	34	29	37	31	26		33	28	24		29
9	52	40	32	27	49	38	30	26	34	28	24		30	25	22		27
10	49	36	29	24	46	35	28	23	31	25	21		28	23	20		25

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2922	2922	2922
5°	2926	2881	2901
10°	2902	2843	2863
15°	2860	2797	2802
20°	2802	2733	2740
25°	2745	2655	2668
30°	2673	2583	2577
35°	2604	2499	2480
40°	2521	2413	2388
45°	2437	2327	2294
50°	2345	2237	2184
55°	2250	2133	2084
60°	2141	2010	1969
65°	2023	1882	1834
70°	1873	1726	1689
75°	1664	1539	1556
80°	1414	1302	1300
85°	1022	891	874

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2437 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	391.9	2.3
10°-20°	1102.6	6.5
20°-30°	1620.4	9.6
30°-40°	1882.0	11.1
40°-50°	1879.7	11.1
50°-60°	1639.0	9.7
60°-70°	1211.6	7.2
70°-80°	685.5	4.1
80°-90°	187.3	1.1
90°-100°	139.6	0.8
100°-110°	443.6	2.6
110°-120°	759.1	4.5
120°-130°	998.3	5.9
130°-140°	1120.6	6.6
140°-150°	1098.9	6.5
150°-160°	921.8	5.5
160°-170°	611.3	3.6
170°-180°	213.7	1.3
0°-30°	3114.9	18.4
0°-40°	4996.9	29.6
0°-60°	8515.5	50.4
0°-90°	10599.9	62.7
90°-120°	1342.3	7.9
90°-150°	4560.1	27.0
90°-180°	6307.0	37.3
0°-180°	16906.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4164	4164	4164	4164	4164	
5°	4164	4148	4104	4136	4128	395
15°	3964	3940	3888	3904	3884	1116
25°	3587	3555	3487	3495	3487	1651
35°	3095	3055	2991	2967	2947	1933
45°	2518	2490	2430	2386	2370	1944
55°	1906	1882	1834	1786	1766	1704
65°	1285	1261	1221	1185	1165	1271
75°	672	665	644	621	629	718
85°	164	160	156	144	140	183
90°	2	24	67	63	65	16
95°	99	118	122	122	118	111
105°	410	415	419	422	422	432
115°	762	773	769	767	762	753
125°	1108	1125	1120	1113	1111	990
135°	1433	1454	1458	1456	1451	1108
145°	1740	1754	1764	1766	1759	1087
155°	1990	1995	2001	2010	2004	916
165°	2164	2162	2162	2176	2166	611
175°	2252	2247	2242	2256	2244	214
180°	2256	2256	2256	2256	2256	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4163.7	4163.7	4163.7	4163.7	4163.7
2.5°	4187.8	4167.9	4123.7	4163.7	4156.0
5°	4163.7	4147.9	4103.7	4135.6	4127.9
7.5°	4135.6	4111.8	4067.6	4099.9	4091.9
10°	4091.9	4063.8	4015.8	4047.7	4035.8
12.5°	4031.5	4007.7	3959.7	3979.7	3971.6
15°	3963.6	3939.8	3887.5	3903.6	3883.7
17.5°	3879.5	3855.7	3803.4	3823.4	3803.4
20°	3787.3	3763.5	3707.5	3719.3	3703.6
22.5°	3695.5	3659.4	3607.1	3607.1	3599.1
25°	3587.2	3555.3	3487.4	3495.1	3487.4
27.5°	3467.0	3439.0	3387.2	3375.2	3355.3
30°	3347.2	3314.9	3255.0	3243.2	3227.0
32.5°	3218.9	3195.2	3131.0	3106.8	3090.7
35°	3094.9	3055.0	2990.8	2966.6	2946.7
37.5°	2954.7	2918.7	2854.5	2826.5	2806.5
40°	2810.8	2778.5	2714.3	2678.6	2662.5
42.5°	2670.6	2638.3	2574.5	2534.2	2510.4
45°	2518.5	2490.5	2430.1	2386.4	2370.3
47.5°	2370.3	2342.2	2278.1	2233.9	2210.1
50°	2213.9	2194.0	2137.9	2081.8	2061.8
52.5°	2061.8	2033.8	1982.0	1937.8	1909.8
55°	1905.9	1881.8	1833.7	1785.7	1765.8
57.5°	1749.6	1729.7	1677.4	1629.4	1613.3
60°	1593.3	1577.6	1521.5	1477.4	1465.4
62.5°	1441.3	1413.2	1373.3	1333.4	1317.2
65°	1285.4	1261.1	1221.2	1185.1	1165.2
67.5°	1125.2	1104.8	1069.2	1041.2	1025.0
70°	977.0	960.8	924.7	896.7	881.0
72.5°	824.9	808.8	788.8	760.8	748.9
75°	672.4	664.8	644.3	620.6	628.7
77.5°	536.5	520.3	512.3	500.3	488.5
80°	400.6	396.3	388.3	376.4	368.3
82.5°	272.2	272.2	268.5	252.4	252.4
85°	164.0	160.2	156.3	144.0	140.2
87.5°	72.2	64.1	56.1	44.1	39.9
90°	2.1	24.5	66.7	62.6	64.6
92.5°	42.2	57.2	59.2	61.2	61.2
95°	99.3	118.3	121.7	121.7	118.3
97.5°	165.3	183.0	190.5	190.5	190.5
100°	241.5	257.1	262.5	262.5	260.5
102.5°	321.7	333.3	340.7	342.8	340.7
105°	409.5	414.9	419.0	422.4	422.4
107.5°	496.5	504.7	504.7	506.0	496.5
110°	580.9	591.7	591.7	591.7	586.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	672.0	683.6	681.5	676.1	672.0
115°	761.8	772.7	769.3	767.2	761.8
117.5°	850.9	865.9	856.3	850.9	845.4
120°	940.7	955.6	940.7	940.7	934.5
122.5°	1022.3	1041.3	1031.8	1026.4	1022.3
125°	1108.0	1125.0	1119.5	1113.4	1111.4
127.5°	1191.7	1212.7	1205.2	1197.1	1191.7
130°	1269.9	1294.3	1290.9	1286.9	1279.4
132.5°	1357.6	1376.6	1378.0	1368.5	1363.1
135°	1433.1	1454.2	1458.3	1456.3	1450.8
137.5°	1517.4	1534.5	1537.8	1536.5	1528.3
140°	1591.6	1608.6	1618.1	1618.1	1610.6
142.5°	1667.8	1684.8	1690.2	1692.3	1684.8
145°	1739.9	1753.5	1764.3	1766.4	1758.9
147.5°	1804.5	1821.5	1829.6	1833.1	1825.6
150°	1871.2	1882.7	1890.2	1896.3	1890.2
152.5°	1930.3	1941.9	1951.4	1958.9	1951.4
155°	1989.5	1994.9	2001.1	2010.5	2004.5
157.5°	2040.5	2044.6	2048.0	2061.5	2052.1
160°	2086.1	2090.2	2092.2	2103.7	2095.6
162.5°	2128.2	2128.2	2130.3	2143.2	2133.7
165°	2164.3	2162.2	2162.2	2175.9	2166.3
167.5°	2196.9	2190.8	2190.8	2204.4	2194.9
170°	2221.4	2216.0	2213.9	2227.6	2216.0
172.5°	2238.5	2233.0	2231.0	2244.5	2233.0
175°	2252.0	2246.6	2242.5	2256.1	2244.5
177.5°	2259.5	2254.1	2250.0	2261.6	2250.0
180°	2256.1	2256.1	2256.1	2256.1	2256.1

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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	12.10	13.09	12.94	13.95	15.03	11.66	12.65	12.50	13.51	14.59
	3H	13.78	14.67	14.63	15.54	16.64	13.29	14.17	14.14	15.05	16.15
	4H	14.37	15.21	15.24	16.09	17.21	13.88	14.72	14.75	15.60	16.71
	6H	14.78	15.56	15.67	16.44	17.57	14.28	15.06	15.16	15.94	17.07
	8H	14.89	15.63	15.78	16.53	17.66	14.39	15.13	15.28	16.03	17.16
	12H	14.95	15.65	15.84	16.55	17.70	14.44	15.14	15.33	16.04	17.19
4H	2H	12.58	13.42	13.45	14.30	15.41	12.23	13.06	13.10	13.94	15.06
	3H	14.46	15.16	15.35	16.07	17.20	14.05	14.76	14.94	15.67	16.80
	4H	15.19	15.82	16.08	16.73	17.89	14.76	15.40	15.66	16.31	17.46
	6H	15.71	16.26	16.62	17.19	18.35	15.28	15.83	16.19	16.76	17.92
	8H	15.87	16.38	16.78	17.31	18.48	15.43	15.95	16.34	16.87	18.04
	12H	15.95	16.41	16.88	17.36	18.53	15.50	15.96	16.43	16.91	18.08
8H	4H	15.39	15.91	16.31	16.83	18.00	15.02	15.53	15.93	16.46	17.63
	6H	16.03	16.46	16.97	17.43	18.60	15.65	16.08	16.59	17.04	18.21
	8H	16.26	16.64	17.21	17.59	18.78	15.87	16.24	16.82	17.20	18.39
	12H	16.40	16.73	17.35	17.68	18.92	15.99	16.32	16.94	17.27	18.51
12H	4H	15.38	15.85	16.32	16.79	17.97	15.02	15.48	15.95	16.42	17.60
	6H	16.07	16.44	17.02	17.40	18.59	15.69	16.07	16.64	17.03	18.22
	8H	16.32	16.65	17.27	17.60	18.84	15.94	16.27	16.89	17.22	18.46