

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: P923288

Luminaire Tested: DFN2DIP-SQ4F0-140D070US940-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923288
REPORT IS A COMBINATION OF REPORTS P900091 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D070US940-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

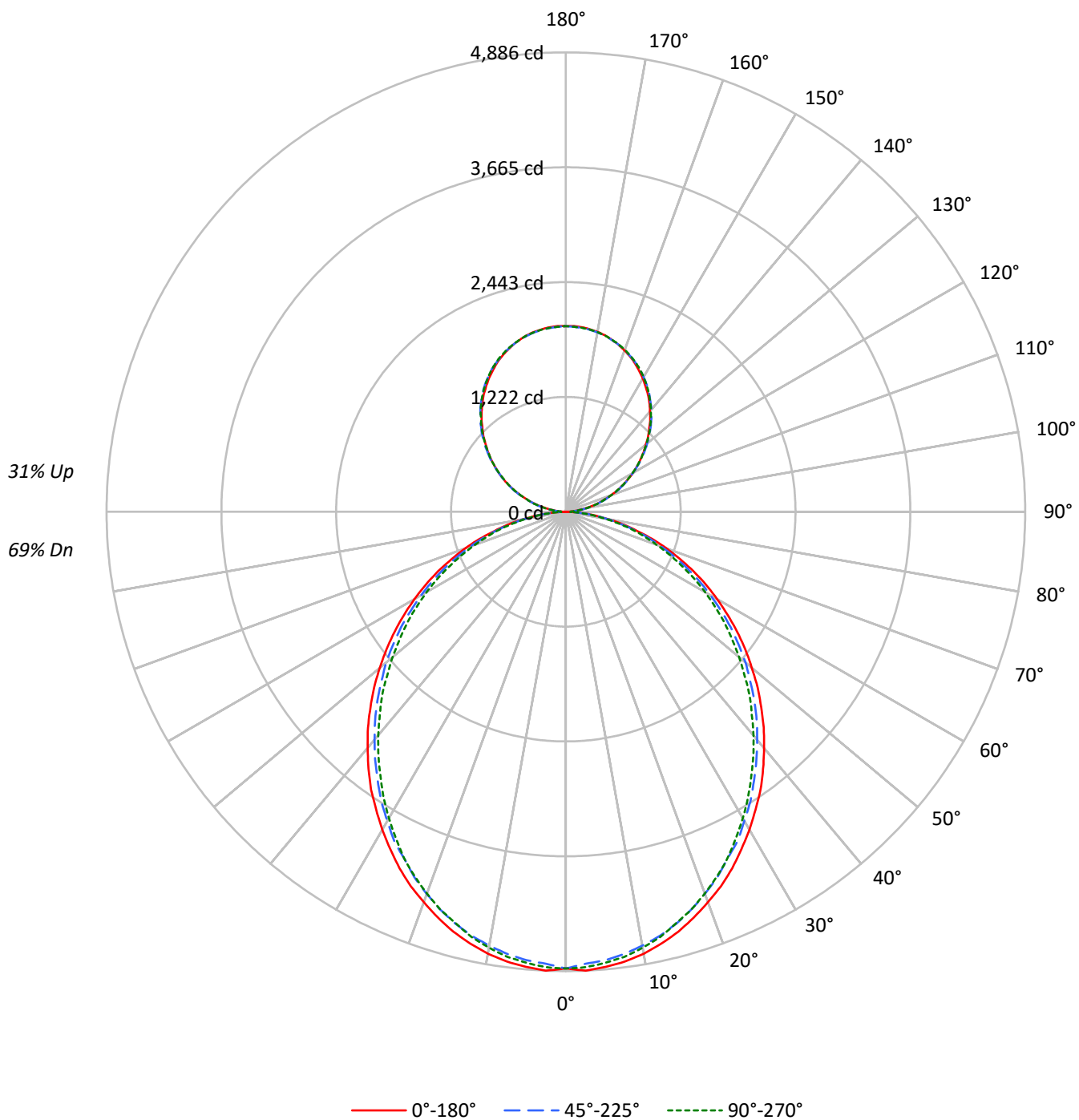
Lumens per Lamp: N/A
Luminaire Lumens: 17883.3 lumens
Efficiency: N/A
Efficacy: 91.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 196
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	112	112	112	112	106	106	106	106	94	94	94	83	83	83	74	74	74
1	102	98	94	90	96	92	89	86	83	80	77	74	71	70	65	64	62
2	93	85	79	74	88	81	75	70	72	68	64	65	61	58	57	55	52
3	85	75	67	61	80	71	64	59	64	58	54	57	53	49	51	48	45
4	78	67	58	52	73	63	56	50	57	51	46	51	46	42	46	42	39
5	71	59	51	45	67	56	49	43	51	45	40	46	41	37	41	37	34
6	66	53	45	39	62	51	43	38	46	40	35	41	36	32	37	33	30
7	61	48	40	34	58	46	39	33	42	35	31	38	33	29	34	30	26
8	57	44	36	31	54	42	35	30	38	32	28	35	29	26	31	27	24
9	53	40	33	27	50	39	31	26	35	29	25	32	27	23	29	25	21
10	50	37	30	25	47	36	29	24	32	27	22	30	25	21	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3408	3408	3408
5°	3414	3362	3385
10°	3386	3317	3340
15°	3336	3263	3269
20°	3269	3188	3197
25°	3202	3098	3113
30°	3118	3014	3006
35°	3039	2915	2893
40°	2941	2815	2786
45°	2843	2715	2676
50°	2736	2610	2548
55°	2625	2489	2432
60°	2498	2344	2298
65°	2361	2196	2140
70°	2185	2014	1970
75°	1942	1796	1815
80°	1649	1519	1516
85°	1192	1039	1019

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2843 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	457.2	2.6
10°-20°	1286.4	7.2
20°-30°	1890.5	10.6
30°-40°	2195.7	12.3
40°-50°	2192.9	12.3
50°-60°	1912.2	10.7
60°-70°	1413.5	7.9
70°-80°	799.7	4.5
80°-90°	216.7	1.2
90°-100°	122.2	0.7
100°-110°	388.1	2.2
110°-120°	664.2	3.7
120°-130°	873.6	4.9
130°-140°	980.5	5.5
140°-150°	961.5	5.4
150°-160°	806.6	4.5
160°-170°	534.9	3.0
170°-180°	187.0	1.0
0°-30°	3634.0	20.3
0°-40°	5829.7	32.6
0°-60°	9934.8	55.6
0°-90°	12364.7	69.1
90°-120°	1174.5	6.6
90°-150°	3990.1	22.3
90°-180°	5519.0	30.9
0°-180°	17883.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4858	4858	4858	4858	4858	
5°	4858	4839	4788	4825	4816	461
15°	4624	4596	4535	4554	4531	1302
25°	4185	4148	4069	4078	4069	1926
35°	3611	3564	3489	3461	3438	2255
45°	2938	2906	2835	2784	2765	2268
55°	2224	2195	2139	2083	2060	1988
65°	1500	1471	1425	1383	1359	1483
75°	784	776	752	724	733	837
85°	191	187	182	168	164	213
90°	2	21	58	55	56	17
95°	87	104	107	107	104	97
105°	358	363	367	370	370	378
115°	667	676	673	671	667	659
125°	970	984	980	974	972	866
135°	1254	1272	1276	1274	1269	969
145°	1522	1534	1544	1546	1539	951
155°	1741	1746	1751	1759	1754	801
165°	1894	1892	1892	1904	1896	534
175°	1970	1966	1962	1974	1964	187
180°	1974	1974	1974	1974	1974	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4857.6	4857.6	4857.6	4857.6	4857.6
2.5°	4885.8	4862.5	4811.0	4857.6	4848.7
5°	4857.6	4839.2	4787.7	4824.9	4815.9
7.5°	4824.9	4797.1	4745.6	4783.2	4773.8
10°	4773.8	4741.1	4685.1	4722.3	4708.4
12.5°	4703.4	4675.7	4619.7	4643.0	4633.6
15°	4624.1	4596.4	4535.4	4554.3	4531.0
17.5°	4526.1	4498.3	4437.3	4460.6	4437.3
20°	4418.5	4390.8	4325.3	4339.2	4320.9
22.5°	4311.4	4269.3	4208.3	4208.3	4199.0
25°	4185.1	4147.9	4068.6	4077.5	4068.6
27.5°	4044.8	4012.2	3951.7	3937.8	3914.5
30°	3905.1	3867.4	3797.5	3783.7	3764.8
32.5°	3755.4	3727.7	3652.8	3624.6	3605.7
35°	3610.7	3564.2	3489.3	3461.1	3437.7
37.5°	3447.2	3405.1	3330.2	3297.5	3274.2
40°	3279.2	3241.5	3166.6	3125.1	3106.2
42.5°	3115.6	3078.0	3003.6	2956.6	2928.8
45°	2938.2	2905.5	2835.2	2784.1	2765.3
47.5°	2765.3	2732.6	2657.7	2606.2	2578.5
50°	2582.9	2559.7	2494.2	2428.8	2405.5
52.5°	2405.5	2372.8	2312.3	2260.8	2228.1
55°	2223.7	2195.4	2139.4	2083.4	2060.1
57.5°	2041.2	2017.9	1957.0	1901.0	1882.1
60°	1858.9	1840.6	1775.1	1723.6	1709.7
62.5°	1681.5	1648.8	1602.1	1555.6	1536.8
65°	1499.6	1471.3	1424.8	1382.6	1359.3
67.5°	1312.8	1289.0	1247.3	1214.6	1195.8
70°	1139.8	1121.0	1078.9	1046.2	1027.8
72.5°	962.4	943.5	920.2	887.6	873.7
75°	784.5	775.6	751.8	724.1	733.4
77.5°	625.9	607.1	597.6	583.8	569.9
80°	467.3	462.4	453.0	439.1	429.6
82.5°	317.6	317.6	313.2	294.4	294.4
85°	191.3	186.8	182.4	168.0	163.5
87.5°	84.3	74.8	65.5	51.5	46.5
90°	1.8	21.4	58.3	54.8	56.5
92.5°	36.9	50.0	51.8	53.6	53.6
95°	86.9	103.5	106.6	106.6	103.5
97.5°	144.6	160.1	166.7	166.7	166.7
100°	211.2	225.0	229.7	229.7	227.9
102.5°	281.5	291.6	298.2	300.0	298.2
105°	358.3	363.0	366.6	369.6	369.6
107.5°	434.4	441.6	441.6	442.8	434.4
110°	508.3	517.8	517.8	517.8	513.0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	588.0	598.2	596.4	591.6	588.0
115°	666.6	676.1	673.2	671.4	666.6
117.5°	744.5	757.6	749.3	744.5	739.8
120°	823.0	836.2	823.0	823.0	817.7
122.5°	894.5	911.1	902.9	898.0	894.5
125°	969.5	984.4	979.6	974.3	972.5
127.5°	1042.7	1061.1	1054.6	1047.5	1042.7
130°	1111.2	1132.6	1129.6	1126.1	1119.5
132.5°	1187.9	1204.6	1205.8	1197.5	1192.7
135°	1254.0	1272.4	1276.0	1274.2	1269.4
137.5°	1327.8	1342.6	1345.6	1344.4	1337.3
140°	1392.7	1407.6	1415.9	1415.9	1409.3
142.5°	1459.3	1474.2	1478.9	1480.7	1474.2
145°	1522.4	1534.3	1543.8	1545.6	1539.1
147.5°	1579.0	1593.8	1601.0	1603.9	1597.4
150°	1637.3	1647.3	1653.9	1659.3	1653.9
152.5°	1689.0	1699.2	1707.4	1714.0	1707.4
155°	1740.8	1745.5	1751.0	1759.3	1753.9
157.5°	1785.5	1789.0	1792.0	1803.9	1795.5
160°	1825.3	1828.9	1830.7	1840.8	1833.6
162.5°	1862.2	1862.2	1864.0	1875.3	1867.0
165°	1893.7	1891.9	1891.9	1903.9	1895.5
167.5°	1922.3	1917.0	1917.0	1928.9	1920.6
170°	1943.8	1939.0	1937.2	1949.1	1939.0
172.5°	1958.6	1953.8	1952.0	1964.0	1953.8
175°	1970.5	1965.8	1962.2	1974.1	1964.0
177.5°	1977.1	1972.3	1968.7	1978.9	1968.7
180°	1974.1	1974.1	1974.1	1974.1	1974.1

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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	13.15	14.21	13.92	15.01	15.98	12.70	13.77	13.48	14.56	15.53
	3H	14.83	15.78	15.61	16.59	17.59	14.34	15.29	15.12	16.10	17.10
	4H	15.43	16.33	16.23	17.14	18.15	14.93	15.84	15.74	16.65	17.66
	6H	15.84	16.67	16.66	17.50	18.52	15.34	16.17	16.16	17.00	18.02
	8H	15.95	16.75	16.78	17.59	18.61	15.45	16.25	16.28	17.09	18.11
	12H	16.01	16.77	16.84	17.60	18.65	15.50	16.26	16.33	17.09	18.14
4H	2H	13.63	14.54	14.44	15.35	16.36	13.28	14.18	14.09	15.00	16.01
	3H	15.52	16.28	16.34	17.12	18.15	15.11	15.87	15.93	16.72	17.74
	4H	16.25	16.93	17.08	17.78	18.83	15.82	16.51	16.66	17.36	18.41
	6H	16.78	17.37	17.63	18.24	19.30	16.35	16.94	17.20	17.81	18.87
	8H	16.94	17.49	17.79	18.36	19.43	16.50	17.05	17.35	17.92	18.99
	12H	17.02	17.52	17.89	18.41	19.48	16.57	17.07	17.44	17.96	19.03
8H	4H	16.46	17.02	17.31	17.88	18.95	16.08	16.64	16.94	17.51	18.58
	6H	17.11	17.57	17.99	18.47	19.54	16.72	17.18	17.60	18.09	19.16
	8H	17.33	17.74	18.22	18.64	19.73	16.94	17.35	17.83	18.25	19.34
	12H	17.48	17.84	18.37	18.73	19.87	17.06	17.42	17.96	18.32	19.46
12H	4H	16.46	16.96	17.33	17.84	18.92	16.09	16.59	16.96	17.47	18.55
	6H	17.14	17.55	18.03	18.45	19.54	16.77	17.17	17.66	18.08	19.16
	8H	17.39	17.75	18.29	18.65	19.79	17.01	17.37	17.91	18.27	19.41