

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: P915933

Luminaire Tested: DFN2DIP-4P4F0-030D070US930-RLONL

Issue Date: 11/21/2024

**Test Information**

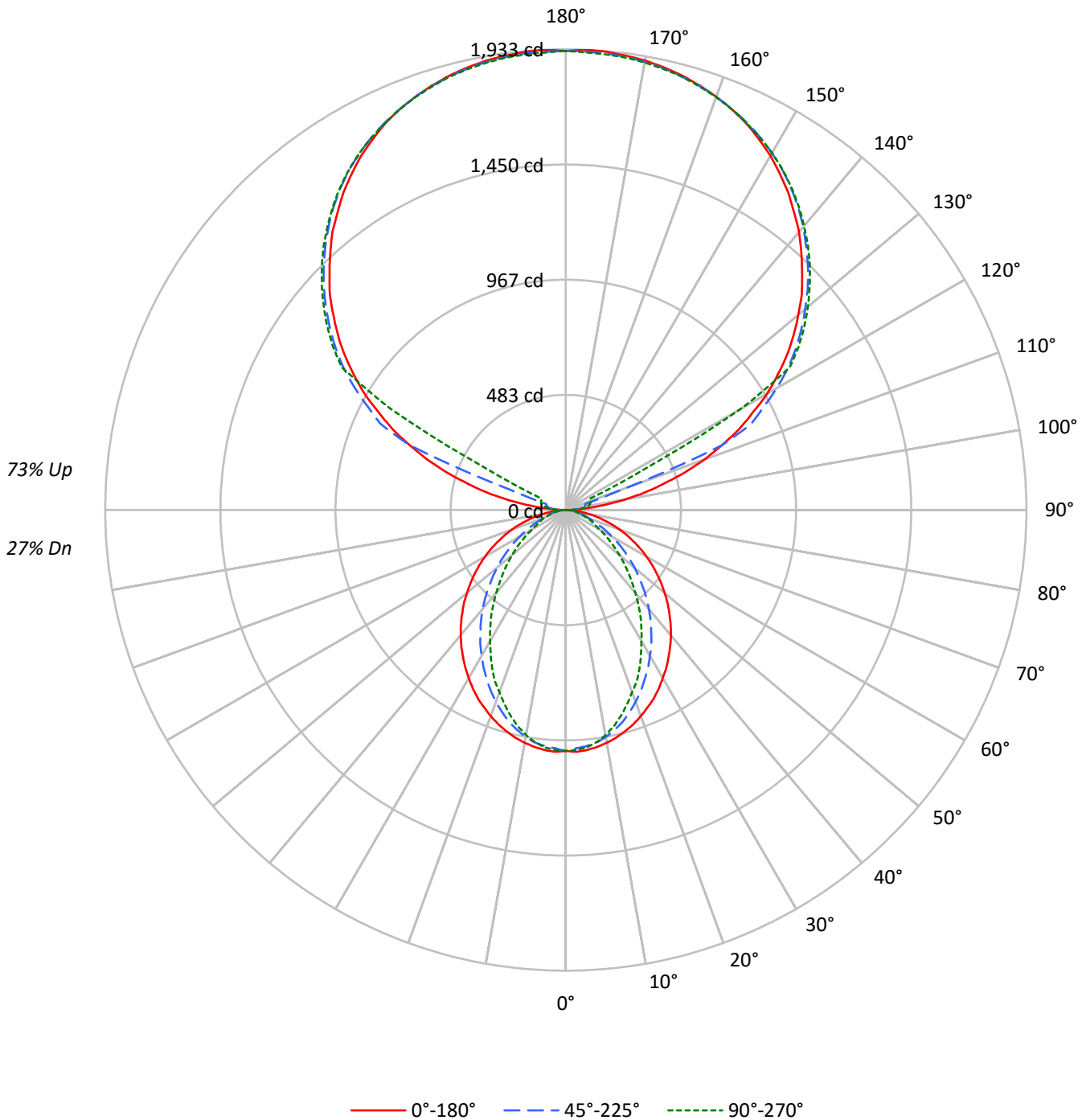
Test Method: LM-79-2019  
Report Number: P915933  
REPORT IS A COMBINATION OF REPORTS P900648 AND P897523  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-4P4F0-030D070US930-RLLONL  
Description: 4 foot, 90deg - 4way Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7729.0 lumens  
Efficiency: N/A  
Efficacy: 87.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 88.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	102	102	102	102	91	91	91	91	71	71	71	52	52	52	35	35	35	27				27
1	93	89	85	82	83	79	76	74	62	60	58	46	45	44	31	31	30	23				23
2	85	78	72	67	75	70	65	61	55	51	49	41	39	37	28	27	26	20				20
3	77	69	62	56	69	62	56	51	48	44	41	36	34	31	25	23	22	17				17
4	71	61	53	48	63	55	48	43	43	39	35	32	29	27	22	21	19	15				15
5	65	54	46	41	58	49	42	37	39	34	30	29	26	23	20	18	17	13				13
6	60	48	41	35	53	44	37	32	35	30	26	26	23	21	18	16	15	12				12
7	55	44	36	31	49	39	33	28	31	27	23	24	21	18	17	15	13	10				10
8	51	40	32	27	46	36	29	25	29	24	21	22	19	16	16	13	12	9				9
9	48	36	29	24	43	33	26	22	26	22	18	20	17	15	14	12	11	9				9
10	44	33	26	22	40	30	24	20	24	20	16	19	15	13	13	11	10	8				8

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	656	656	656
5°	657	646	650
10°	650	633	629
15°	642	612	596
20°	630	584	557
25°	618	552	518
30°	601	519	469
35°	585	483	426
40°	569	446	377
45°	551	406	332
50°	531	364	288
55°	511	320	246
60°	487	274	203
65°	460	227	183
70°	428	184	166
75°	386	162	151
80°	327	137	132
85°	228	93	101

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 994 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	94.7	1.2
10°-20°	260.1	3.4
20°-30°	365.1	4.7
30°-40°	398.0	5.1
40°-50°	365.8	4.7
50°-60°	287.3	3.7
60°-70°	187.0	2.4
70°-80°	96.3	1.2
80°-90°	28.0	0.4
90°-100°	63.5	0.8
100°-110°	236.8	3.1
110°-120°	627.9	8.1
120°-130°	1041.5	13.5
130°-140°	1106.3	14.3
140°-150°	1028.1	13.3
150°-160°	826.6	10.7
160°-170°	532.6	6.9
170°-180°	183.3	2.4
0°-30°	720.0	9.3
0°-40°	1118.0	14.5
0°-60°	1771.2	22.9
0°-90°	2082.4	26.9
90°-120°	928.2	12.0
90°-150°	4104.1	53.1
90°-180°	5647.0	73.1
0°-180°	7729.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1011	1011	1011	1011	1011	
5°	1011	1006	994	1003	1000	96
15°	962	951	920	903	894	271
25°	873	843	783	746	732	401
35°	752	705	625	567	547	471
45°	615	553	458	392	370	475
55°	467	396	297	242	225	418
65°	316	242	159	128	125	313
75°	168	104	73	67	66	178
85°	39	20	17	17	17	45
90°	1	17	28	35	38	7
95°	90	44	54	61	60	107
105°	424	466	85	100	106	453
115°	801	825	860	215	114	789
125°	1133	1151	1178	1188	1192	1010
135°	1402	1424	1437	1451	1448	1083
145°	1626	1625	1649	1658	1652	1017
155°	1791	1778	1795	1803	1792	825
165°	1887	1879	1883	1893	1883	533
175°	1930	1920	1923	1933	1919	184
180°	1926	1926	1926	1926	1926	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1010.9	1010.9	1010.9	1010.9	1010.9
2.5°	1015.5	1010.9	1000.8	1010.0	1008.2
5°	1010.9	1006.3	994.4	1002.7	999.9
7.5°	1002.7	997.2	984.4	988.0	983.4
10°	991.6	985.3	967.0	964.2	958.8
12.5°	978.0	969.7	945.0	939.5	929.4
15°	961.5	951.4	920.3	902.9	893.8
17.5°	942.2	927.6	889.2	869.1	854.4
20°	920.3	902.0	856.2	833.5	813.3
22.5°	896.6	875.5	822.4	791.3	777.6
25°	872.8	843.4	783.1	745.6	731.8
27.5°	844.4	813.3	746.5	703.5	682.4
30°	814.2	779.4	706.2	659.7	634.9
32.5°	784.9	742.8	667.9	612.9	590.0
35°	752.0	705.3	624.8	567.2	547.1
37.5°	720.0	669.6	584.6	521.4	498.6
40°	686.2	631.3	542.5	477.5	453.8
42.5°	651.3	592.9	500.4	432.7	409.9
45°	614.8	553.4	457.5	392.4	370.5
47.5°	580.0	515.1	416.3	351.2	331.2
50°	541.6	476.6	376.0	312.8	293.7
52.5°	504.0	435.5	337.6	277.2	259.8
55°	467.4	396.1	297.3	242.5	225.1
57.5°	430.0	356.8	261.7	210.4	195.8
60°	391.5	318.4	224.1	177.5	162.9
62.5°	354.1	280.9	192.1	148.2	141.0
65°	315.6	241.5	159.1	128.1	125.3
67.5°	279.1	204.9	128.1	112.5	109.7
70°	240.6	169.3	106.1	96.9	93.3
72.5°	204.0	136.2	88.7	81.4	79.6
75°	168.3	104.3	73.2	66.8	65.9
77.5°	132.6	74.0	57.6	54.0	52.1
80°	99.7	53.1	43.9	40.3	40.3
82.5°	69.5	35.7	30.2	28.4	28.4
85°	39.3	20.1	17.4	17.4	17.4
87.5°	14.7	7.3	7.3	6.4	6.4
90°	1.3	16.7	27.8	34.9	37.6
92.5°	34.9	29.3	33.4	36.3	37.6
95°	90.5	44.5	54.3	61.4	59.9
97.5°	163.0	48.8	71.0	75.3	76.6
100°	246.8	55.8	79.4	90.5	93.4
102.5°	338.6	336.0	82.3	97.5	101.7
105°	423.7	465.5	85.0	100.3	105.9
107.5°	522.6	557.4	87.9	103.1	108.8
110°	617.5	646.6	243.9	104.6	110.1



TEST NUMBER: P915933

CATALOG NUMBER: DFN2DIP-4P4F0-030D070US930-RLLONL

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	706.7	731.6	708.0	107.2	111.5
115°	801.4	825.0	859.9	214.7	114.4
117.5°	883.6	911.4	935.2	735.8	370.7
120°	975.6	996.5	1021.7	1038.4	850.2
122.5°	1053.5	1075.9	1103.9	1112.1	1113.6
125°	1133.0	1151.2	1177.7	1187.5	1191.6
127.5°	1205.5	1225.0	1246.0	1260.0	1261.3
130°	1273.8	1296.2	1311.4	1326.8	1325.5
132.5°	1343.5	1361.7	1377.0	1389.5	1388.2
135°	1402.1	1424.4	1436.9	1450.9	1448.1
137.5°	1463.3	1480.1	1494.1	1508.1	1503.9
140°	1523.2	1534.5	1549.7	1562.3	1555.3
142.5°	1573.5	1583.3	1601.3	1612.4	1605.5
145°	1626.5	1625.1	1648.7	1658.5	1651.5
147.5°	1672.3	1668.3	1691.9	1698.8	1693.4
150°	1717.0	1707.3	1729.7	1737.9	1731.0
152.5°	1754.6	1743.5	1764.4	1772.8	1763.1
155°	1790.9	1778.4	1795.1	1803.4	1792.4
157.5°	1820.2	1809.1	1821.6	1831.4	1820.2
160°	1845.3	1836.9	1845.3	1853.6	1843.8
162.5°	1867.5	1859.2	1866.1	1875.9	1863.4
165°	1887.0	1878.8	1882.8	1892.6	1882.8
167.5°	1902.4	1893.9	1898.3	1908.0	1895.5
170°	1915.0	1906.6	1909.3	1919.1	1906.6
172.5°	1923.3	1915.0	1917.8	1927.5	1915.0
175°	1930.2	1920.4	1923.3	1933.0	1919.1
177.5°	1933.0	1923.3	1924.8	1934.5	1921.9
180°	1926.1	1926.1	1926.1	1926.1	1926.1



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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	3.03	3.70	4.17	4.83	6.39	0.00	0.00	0.13	0.79	2.35
	3H	4.70	5.30	5.85	6.43	8.02	0.17	0.77	1.31	1.90	3.48
	4H	5.31	5.88	6.46	7.01	8.60	0.61	1.18	1.77	2.32	3.90
	6H	5.72	6.25	6.89	7.38	8.98	0.93	1.45	2.09	2.59	4.19
	8H	5.85	6.35	7.01	7.50	9.09	1.01	1.51	2.18	2.66	4.26
	12H	5.91	6.38	7.08	7.52	9.14	1.05	1.53	2.22	2.67	4.28
4H	2H	3.03	3.60	4.19	4.73	6.32	0.00	0.14	0.73	1.27	2.86
	3H	4.85	5.32	6.02	6.48	8.08	0.91	1.38	2.07	2.54	4.14
	4H	5.54	5.98	6.71	7.12	8.74	1.45	1.89	2.62	3.03	4.65
	6H	6.05	6.42	7.22	7.60	9.21	1.86	2.24	3.04	3.41	5.02
	8H	6.23	6.58	7.40	7.74	9.36	1.99	2.34	3.16	3.50	5.13
	12H	6.32	6.63	7.51	7.81	9.44	2.05	2.36	3.24	3.54	5.17
8H	4H	5.50	5.84	6.67	7.01	8.63	1.72	2.07	2.89	3.23	4.86
	6H	6.06	6.35	7.25	7.55	9.18	2.24	2.52	3.43	3.73	5.35
	8H	6.28	6.53	7.48	7.71	9.36	2.43	2.68	3.63	3.86	5.51
	12H	6.42	6.64	7.62	7.82	9.49	2.54	2.76	3.74	3.94	5.62
12H	4H	5.44	5.76	6.63	6.93	8.56	1.72	2.04	2.91	3.21	4.84
	6H	6.04	6.29	7.23	7.47	9.11	2.29	2.54	3.48	3.72	5.36
	8H	6.25	6.47	7.46	7.65	9.33	2.49	2.71	3.69	3.89	5.57