

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: P915140

Luminaire Tested: DFN2DIP-SQ4F0-160D070US927-FLLFLL

Issue Date: 11/21/2024

**Test Information**

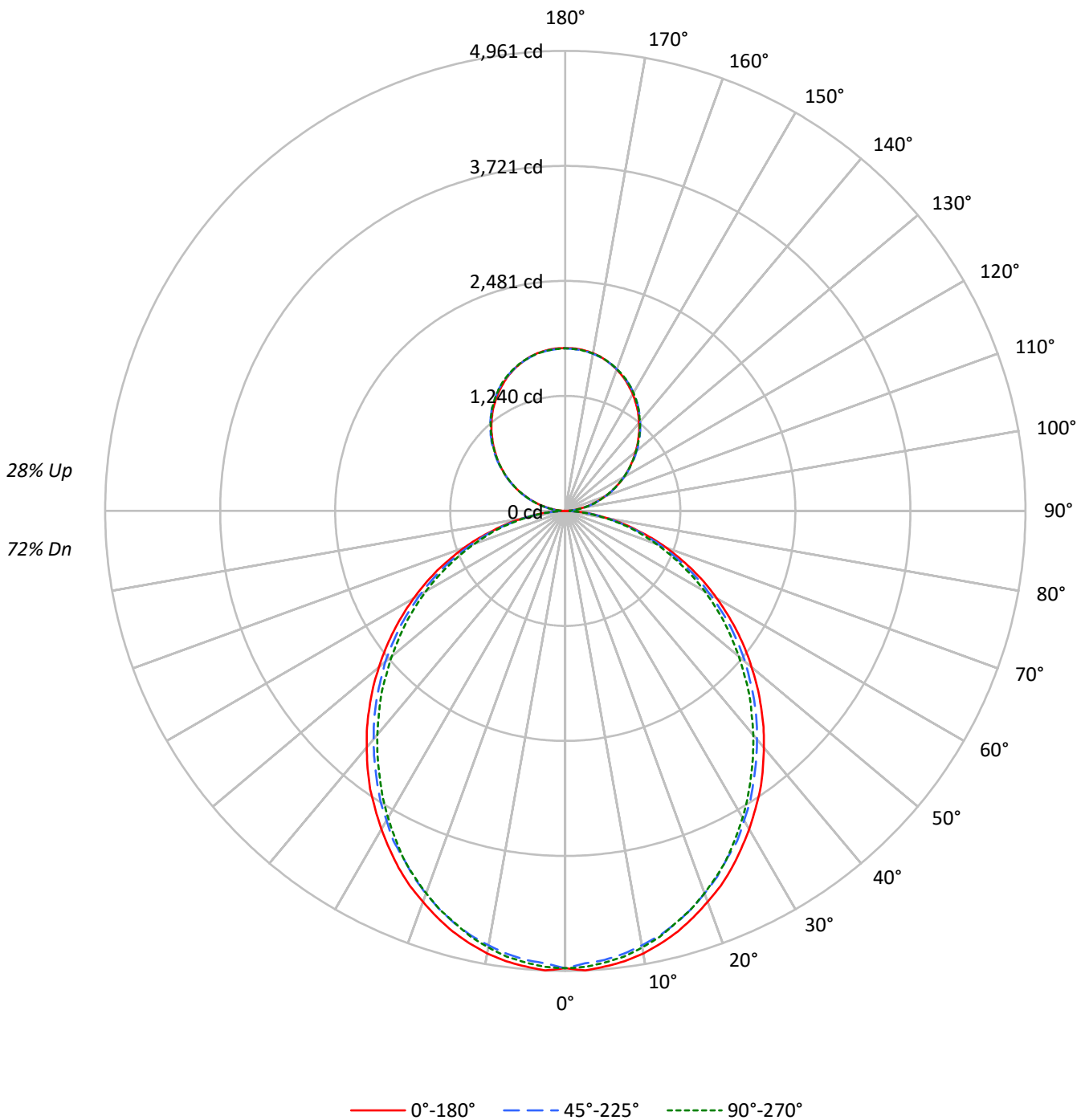
Test Method: LM-79-2019  
Report Number: P915140  
REPORT IS A COMBINATION OF REPORTS P900093 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-160D070US927-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17455.7 lumens  
Efficiency: N/A  
Efficacy: 79.7 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: Semi-Direct  
  
Input Watts (W): 218.9  
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			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	112	112	112	112	106	106	106	106	96	96	96	85	85	85	76	76	76	76	76	76	72
1	103	98	94	91	97	93	90	86	84	81	79	75	73	71	67	66	64	64	64	64	61
2	94	86	79	74	88	82	76	71	74	69	65	66	63	60	59	57	54	54	54	54	51
3	85	76	68	62	81	72	65	59	65	59	55	59	54	51	53	49	46	46	46	46	43
4	78	67	59	52	74	64	56	51	58	52	47	52	47	43	47	43	40	40	40	40	37
5	72	60	51	45	68	57	49	44	52	45	41	47	42	38	42	38	35	35	35	35	32
6	66	54	45	39	63	51	44	38	47	40	36	43	37	33	39	34	31	31	31	31	28
7	61	49	40	35	58	47	39	34	43	36	31	39	33	29	35	31	27	27	27	27	25
8	57	44	36	31	54	43	35	30	39	33	28	36	30	26	32	28	25	25	25	25	22
9	53	41	33	28	51	39	32	27	36	30	25	33	28	24	30	25	22	22	22	22	20
10	50	37	30	25	47	36	29	24	33	27	23	30	25	22	28	23	20	20	20	20	18

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

	0°	45°	90°
0°	3461	3461	3461
5°	3466	3413	3436
10°	3438	3368	3391
15°	3387	3313	3319
20°	3319	3237	3246
25°	3251	3145	3160
30°	3166	3060	3052
35°	3085	2960	2937
40°	2986	2858	2828
45°	2887	2757	2717
50°	2778	2650	2587
55°	2665	2527	2469
60°	2536	2380	2333
65°	2397	2229	2172
70°	2218	2044	2000
75°	1972	1824	1843
80°	1674	1542	1540
85°	1210	1055	1035

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 2887 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	464.2	2.7
10°-20°	1306.0	7.5
20°-30°	1919.4	11.0
30°-40°	2229.2	12.8
40°-50°	2226.5	12.8
50°-60°	1941.4	11.1
60°-70°	1435.1	8.2
70°-80°	812.0	4.7
80°-90°	219.3	1.3
90°-100°	108.5	0.6
100°-110°	344.8	2.0
110°-120°	590.1	3.4
120°-130°	776.1	4.4
130°-140°	871.1	5.0
140°-150°	854.2	4.9
150°-160°	716.6	4.1
160°-170°	475.2	2.7
170°-180°	166.1	1.0
0°-30°	3689.6	21.1
0°-40°	5918.9	33.9
0°-60°	10086.7	57.8
0°-90°	12553.1	71.9
90°-120°	1043.4	6.0
90°-150°	3544.8	20.3
90°-180°	4903.0	28.1
0°-180°	17455.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4932	4932	4932	4932	4932	
5°	4932	4913	4861	4899	4890	468
15°	4695	4667	4605	4624	4600	1322
25°	4249	4211	4131	4140	4131	1955
35°	3666	3619	3543	3514	3490	2289
45°	2983	2950	2878	2827	2808	2302
55°	2258	2229	2172	2115	2092	2018
65°	1522	1494	1446	1404	1380	1505
75°	796	787	763	735	745	850
85°	194	190	185	171	166	217
90°	2	19	52	49	50	17
95°	77	92	95	95	92	86
105°	318	322	326	328	328	336
115°	592	601	598	596	592	586
125°	861	874	870	866	864	770
135°	1114	1130	1134	1132	1128	861
145°	1352	1363	1372	1373	1367	845
155°	1546	1551	1556	1563	1558	712
165°	1682	1681	1681	1691	1684	475
175°	1751	1746	1743	1754	1745	166
180°	1754	1754	1754	1754	1754	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4931.9	4931.9	4931.9	4931.9	4931.9
2.5°	4960.6	4936.9	4884.6	4931.9	4922.8
5°	4931.9	4913.3	4860.9	4898.7	4889.6
7.5°	4898.7	4870.5	4818.1	4856.4	4846.8
10°	4846.8	4813.6	4756.8	4794.5	4780.4
12.5°	4775.4	4747.2	4690.3	4714.0	4704.4
15°	4694.9	4666.7	4604.8	4624.0	4600.3
17.5°	4595.3	4567.1	4505.2	4528.8	4505.2
20°	4486.0	4457.9	4391.5	4405.6	4386.9
22.5°	4377.4	4334.7	4272.7	4272.7	4263.2
25°	4249.1	4211.4	4130.8	4139.9	4130.8
27.5°	4106.7	4073.5	4012.1	3998.1	3974.4
30°	3964.8	3926.6	3855.6	3841.5	3822.4
32.5°	3812.8	3784.7	3708.7	3680.0	3660.9
35°	3666.0	3618.7	3542.6	3514.0	3490.4
37.5°	3499.9	3457.2	3381.2	3347.9	3324.3
40°	3329.3	3291.1	3215.1	3172.8	3153.8
42.5°	3163.3	3125.1	3049.6	3001.8	2973.6
45°	2983.2	2949.9	2878.5	2826.7	2807.6
47.5°	2807.6	2774.4	2698.4	2646.0	2617.9
50°	2622.4	2598.8	2532.4	2465.9	2442.3
52.5°	2442.3	2409.1	2347.7	2295.3	2262.2
55°	2257.6	2229.0	2172.1	2115.2	2091.6
57.5°	2072.5	2048.8	1986.9	1930.1	1911.0
60°	1887.3	1868.7	1802.3	1749.9	1735.8
62.5°	1707.2	1674.0	1626.7	1579.4	1560.3
65°	1522.5	1493.8	1446.5	1403.8	1380.1
67.5°	1332.8	1308.7	1266.5	1233.2	1214.1
70°	1157.2	1138.1	1095.3	1062.2	1043.5
72.5°	977.1	958.0	934.4	901.1	887.1
75°	796.5	787.4	763.3	735.1	744.7
77.5°	635.5	616.4	606.8	592.7	578.6
80°	474.4	469.4	459.9	445.8	436.3
82.5°	322.5	322.5	318.0	298.9	298.9
85°	194.2	189.6	185.1	170.6	166.0
87.5°	85.6	76.0	66.4	52.4	47.3
90°	1.6	19.0	51.8	48.6	50.2
92.5°	32.8	44.4	46.0	47.6	47.6
95°	77.2	92.0	94.7	94.7	92.0
97.5°	128.5	142.2	148.1	148.1	148.1
100°	187.7	199.9	204.1	204.1	202.5
102.5°	250.1	259.0	264.9	266.5	264.9
105°	318.3	322.5	325.7	328.4	328.4
107.5°	386.0	392.3	392.3	393.4	386.0
110°	451.5	460.0	460.0	460.0	455.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	522.4	531.4	529.8	525.5	522.4
115°	592.2	600.6	598.0	596.4	592.2
117.5°	661.4	673.0	665.7	661.4	657.2
120°	731.2	742.8	731.2	731.2	726.4
122.5°	794.6	809.5	802.1	797.8	794.6
125°	861.3	874.5	870.3	865.5	864.0
127.5°	926.3	942.7	936.9	930.6	926.3
130°	987.1	1006.1	1003.5	1000.4	994.5
132.5°	1055.3	1070.2	1071.2	1063.8	1059.5
135°	1114.0	1130.4	1133.6	1131.9	1127.7
137.5°	1179.6	1192.8	1195.4	1194.4	1188.0
140°	1237.2	1250.5	1257.8	1257.8	1252.0
142.5°	1296.4	1309.6	1313.8	1315.4	1309.6
145°	1352.5	1363.0	1371.5	1373.1	1367.3
147.5°	1402.7	1415.9	1422.3	1424.9	1419.1
150°	1454.5	1463.5	1469.3	1474.1	1469.3
152.5°	1500.5	1509.5	1516.9	1522.7	1516.9
155°	1546.5	1550.7	1555.5	1562.9	1558.1
157.5°	1586.2	1589.4	1592.0	1602.6	1595.1
160°	1621.6	1624.8	1626.3	1635.3	1629.0
162.5°	1654.4	1654.4	1656.0	1666.0	1658.6
165°	1682.4	1680.8	1680.8	1691.4	1683.9
167.5°	1707.8	1703.0	1703.0	1713.6	1706.2
170°	1726.8	1722.6	1721.0	1731.5	1722.6
172.5°	1740.0	1735.7	1734.2	1744.8	1735.7
175°	1750.6	1746.4	1743.2	1753.7	1744.8
177.5°	1756.4	1752.1	1749.0	1758.0	1749.0
180°	1753.7	1753.7	1753.7	1753.7	1753.7



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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	13.41	14.51	14.15	15.28	16.20	12.97	14.07	13.71	14.83	15.75
	3H	15.09	16.08	15.85	16.86	17.81	14.60	15.59	15.36	16.37	17.32
	4H	15.70	16.63	16.47	17.41	18.37	15.20	16.13	15.98	16.92	17.88
	6H	16.11	16.97	16.90	17.76	18.74	15.61	16.47	16.40	17.26	18.24
	8H	16.22	17.04	17.02	17.86	18.83	15.72	16.54	16.52	17.35	18.33
	12H	16.28	17.07	17.09	17.87	18.87	15.77	16.56	16.58	17.36	18.37
4H	2H	13.90	14.83	14.68	15.62	16.58	13.55	14.48	14.33	15.26	16.23
	3H	15.79	16.57	16.58	17.39	18.37	15.39	16.17	16.18	16.98	17.96
	4H	16.52	17.23	17.33	18.05	19.05	16.10	16.81	16.90	17.62	18.63
	6H	17.05	17.67	17.88	18.51	19.52	16.62	17.24	17.44	18.08	19.09
	8H	17.21	17.79	18.04	18.62	19.65	16.77	17.35	17.60	18.19	19.21
	12H	17.30	17.81	18.14	18.67	19.70	16.85	17.37	17.69	18.22	19.25
8H	4H	16.74	17.31	17.56	18.15	19.17	16.36	16.93	17.19	17.77	18.80
	6H	17.38	17.86	18.24	18.74	19.76	17.00	17.48	17.85	18.35	19.38
	8H	17.61	18.03	18.47	18.91	19.95	17.22	17.64	18.08	18.51	19.56
	12H	17.75	18.13	18.62	18.99	20.09	17.34	17.72	18.21	18.58	19.68
12H	4H	16.73	17.25	17.58	18.11	19.14	16.37	16.88	17.21	17.74	18.77
	6H	17.41	17.84	18.28	18.71	19.76	17.04	17.47	17.91	18.34	19.38
	8H	17.67	18.04	18.54	18.91	20.01	17.29	17.66	18.16	18.53	19.63