

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: P909320

Luminaire Tested: DFN2DIP-SQ3F0-110D040US840-FLLFLL

Issue Date: 11/21/2024

**Test Information**

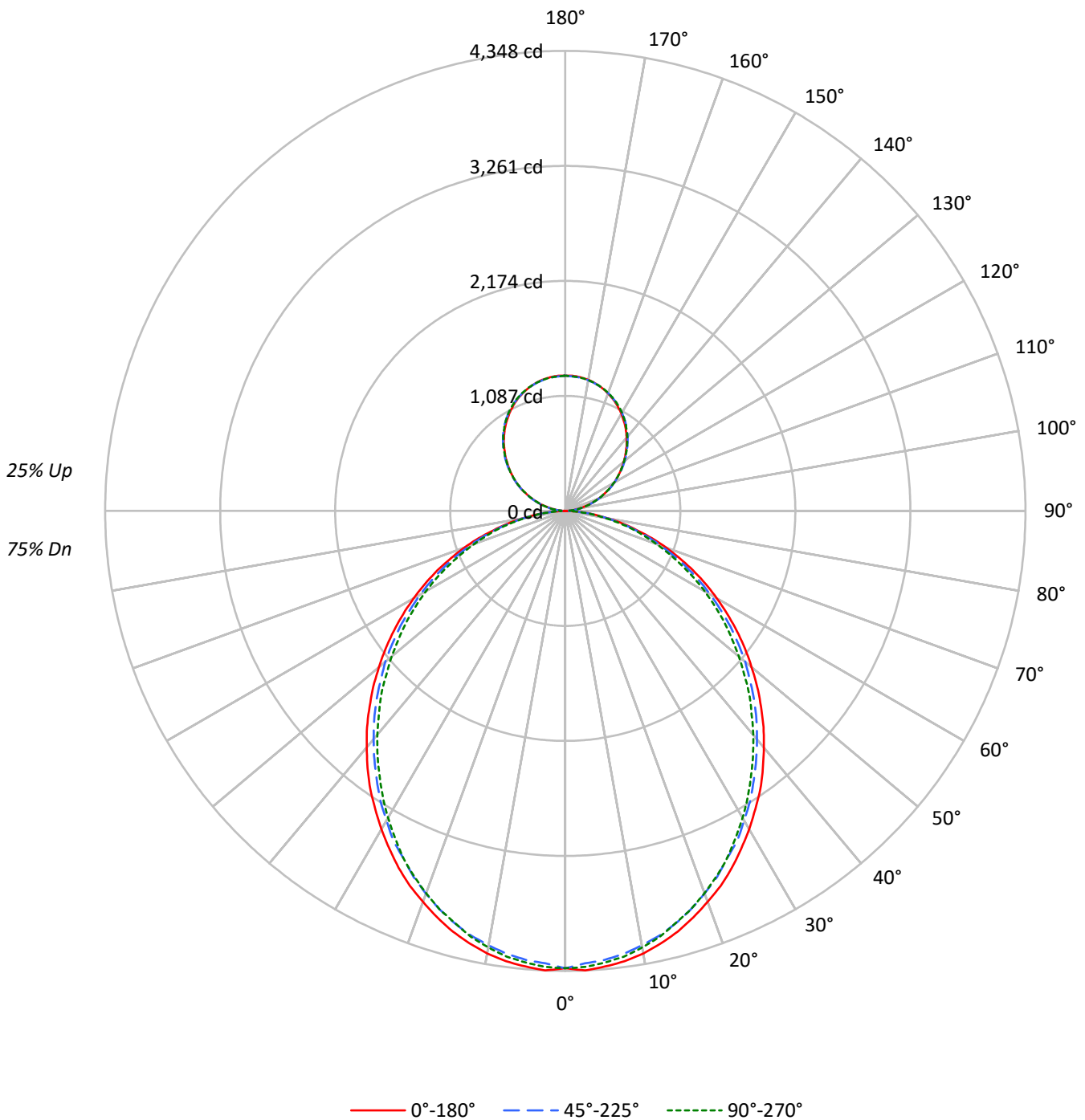
Test Method: LM-79-2019  
Report Number: P909320  
REPORT IS A COMBINATION OF REPORTS P899875 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-110D040US840-FLLFLL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14572.4 lumens  
Efficiency: N/A  
Efficacy: 102.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 142.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9977  
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	113	113	113	113	108	108	108	108	97	97	97	88	88	88	80	80	80	80	80	80	75
1	104	99	95	91	98	94	91	88	86	83	80	78	76	74	70	69	67	70	69	67	64
2	94	87	80	75	89	83	77	72	75	71	67	68	65	62	62	59	57	62	59	57	53
3	86	76	68	62	82	73	66	60	66	61	56	60	56	52	55	51	48	55	51	48	45
4	79	68	59	53	75	65	57	51	59	53	48	54	49	45	49	45	42	49	45	42	39
5	73	60	52	46	69	58	50	44	53	46	42	48	43	39	44	40	36	44	40	36	34
6	67	54	46	40	63	52	44	39	48	41	36	44	38	34	40	36	32	40	36	32	30
7	62	49	41	35	59	47	40	34	44	37	32	40	34	30	37	32	29	37	32	29	26
8	58	45	37	31	55	43	36	30	40	33	29	37	31	27	34	29	26	34	29	26	23
9	54	41	33	28	51	40	32	27	37	30	26	34	28	25	31	27	23	31	27	23	21
10	50	38	30	25	48	36	29	25	34	28	23	31	26	22	29	24	21	29	24	21	19

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

	0°	45°	90°
0°	4953	4953	4953
5°	4957	4880	4915
10°	4914	4811	4847
15°	4839	4729	4741
20°	4738	4615	4633
25°	4638	4481	4509
30°	4512	4355	4350
35°	4394	4207	4183
40°	4248	4058	4024
45°	4103	3908	3861
50°	3944	3750	3673
55°	3777	3568	3499
60°	3588	3352	3300
65°	3381	3128	3065
70°	3118	2854	2812
75°	2755	2526	2576
80°	2316	2108	2129
85°	1631	1397	1393

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 4103 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	406.8	2.8
10°-20°	1144.7	7.9
20°-30°	1682.2	11.5
30°-40°	1953.7	13.4
40°-50°	1951.3	13.4
50°-60°	1701.5	11.7
60°-70°	1257.8	8.6
70°-80°	711.6	4.9
80°-90°	191.5	1.3
90°-100°	79.1	0.5
100°-110°	251.2	1.7
110°-120°	429.8	2.9
120°-130°	565.3	3.9
130°-140°	634.5	4.4
140°-150°	622.2	4.3
150°-160°	522.0	3.6
160°-170°	346.2	2.4
170°-180°	121.0	0.8
0°-30°	3233.7	22.2
0°-40°	5187.4	35.6
0°-60°	8840.2	60.7
0°-90°	11001.1	75.5
90°-120°	760.1	5.2
90°-150°	2582.2	17.7
90°-180°	3571.0	24.5
0°-180°	14572.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4322	4322	4322	4322	4322	
5°	4322	4306	4260	4293	4285	410
15°	4115	4090	4036	4052	4032	1159
25°	3724	3691	3620	3628	3620	1714
35°	3213	3172	3105	3080	3059	2006
45°	2614	2585	2523	2477	2461	2018
55°	1979	1954	1904	1854	1833	1769
65°	1334	1309	1268	1230	1210	1319
75°	698	690	669	644	653	745
85°	170	166	162	150	146	190
90°	1	14	38	35	37	14
95°	56	67	69	69	67	63
105°	232	235	237	239	239	245
115°	431	438	436	434	431	427
125°	627	637	634	630	629	561
135°	812	823	826	825	822	627
145°	985	993	999	1000	996	616
155°	1126	1130	1133	1138	1135	519
165°	1226	1224	1224	1232	1227	346
175°	1275	1272	1270	1278	1271	121
180°	1278	1278	1278	1278	1278	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4322.4	4322.4	4322.4	4322.4	4322.4
2.5°	4347.5	4326.8	4280.9	4322.4	4314.4
5°	4322.4	4306.1	4260.2	4293.2	4285.4
7.5°	4293.2	4268.6	4222.8	4256.3	4247.9
10°	4247.9	4218.7	4168.9	4201.9	4189.6
12.5°	4185.3	4160.5	4110.8	4131.5	4123.1
15°	4114.7	4090.0	4035.7	4052.5	4031.8
17.5°	4027.3	4002.7	3948.5	3969.2	3948.5
20°	3931.7	3907.0	3848.8	3861.1	3844.9
22.5°	3836.5	3798.9	3744.7	3744.7	3736.3
25°	3724.0	3691.0	3620.4	3628.3	3620.4
27.5°	3599.2	3570.1	3516.3	3503.9	3483.2
30°	3474.8	3441.3	3379.1	3366.8	3350.0
32.5°	3341.6	3317.0	3250.4	3225.2	3208.4
35°	3212.9	3171.5	3104.8	3079.7	3059.0
37.5°	3067.4	3029.9	2963.3	2934.2	2913.5
40°	2917.9	2884.4	2817.8	2780.8	2764.0
42.5°	2772.4	2738.9	2672.7	2630.8	2606.2
45°	2614.5	2585.4	2522.7	2477.4	2460.6
47.5°	2460.6	2431.6	2364.9	2319.1	2294.3
50°	2298.4	2277.7	2219.4	2161.2	2140.5
52.5°	2140.5	2111.3	2057.6	2011.7	1982.6
55°	1978.6	1953.5	1903.7	1853.8	1833.1
57.5°	1816.3	1795.6	1741.4	1691.5	1674.8
60°	1654.1	1637.8	1579.5	1533.7	1521.4
62.5°	1496.2	1467.1	1425.6	1384.2	1367.5
65°	1334.3	1309.2	1267.8	1230.3	1209.6
67.5°	1168.1	1147.0	1109.9	1080.9	1064.1
70°	1014.2	997.4	960.0	930.9	914.5
72.5°	856.4	839.6	818.9	789.8	777.4
75°	698.0	690.1	668.9	644.3	652.7
77.5°	556.9	540.2	531.8	519.5	507.2
80°	415.9	411.4	403.0	390.7	382.3
82.5°	282.7	282.7	278.7	262.0	262.0
85°	170.3	166.2	162.3	149.5	145.5
87.5°	74.9	66.6	58.2	45.8	41.4
90°	1.1	13.8	37.8	35.4	36.6
92.5°	23.8	32.3	33.5	34.6	34.6
95°	56.2	67.1	69.0	69.0	67.1
97.5°	93.6	103.6	107.9	107.9	107.9
100°	136.7	145.6	148.7	148.7	147.5
102.5°	182.2	188.7	193.0	194.1	193.0
105°	231.9	234.9	237.2	239.1	239.1
107.5°	281.1	285.8	285.8	286.5	281.1
110°	328.9	335.1	335.1	335.1	332.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	380.5	387.1	385.9	382.8	380.5
115°	431.3	437.6	435.6	434.4	431.3
117.5°	481.8	490.3	484.9	481.8	478.8
120°	532.7	541.1	532.7	532.7	529.2
122.5°	578.9	589.7	584.3	581.2	578.9
125°	627.4	637.0	634.0	630.5	629.3
127.5°	674.8	686.7	682.5	677.8	674.8
130°	719.0	733.0	731.0	728.7	724.5
132.5°	768.7	779.5	780.3	774.9	771.8
135°	811.5	823.4	825.8	824.6	821.5
137.5°	859.3	868.9	870.8	870.0	865.5
140°	901.2	910.9	916.3	916.3	912.0
142.5°	944.4	954.0	957.0	958.3	954.0
145°	985.2	992.9	999.1	1000.3	996.0
147.5°	1021.8	1031.4	1036.0	1037.9	1033.7
150°	1059.6	1066.1	1070.4	1073.8	1070.4
152.5°	1093.1	1099.5	1105.0	1109.2	1105.0
155°	1126.5	1129.6	1133.1	1138.5	1135.0
157.5°	1155.5	1157.7	1159.6	1167.4	1162.0
160°	1181.2	1183.6	1184.7	1191.2	1186.6
162.5°	1205.1	1205.1	1206.3	1213.6	1208.2
165°	1225.6	1224.4	1224.4	1232.0	1226.7
167.5°	1244.1	1240.5	1240.5	1248.3	1242.8
170°	1257.9	1254.8	1253.6	1261.3	1254.8
172.5°	1267.5	1264.5	1263.2	1271.0	1264.5
175°	1275.3	1272.1	1269.8	1277.5	1271.0
177.5°	1279.5	1276.4	1274.0	1280.6	1274.0
180°	1277.5	1277.5	1277.5	1277.5	1277.5



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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	14.88	16.03	15.58	16.75	17.60	14.43	15.58	15.14	16.30	17.16
	3H	16.56	17.59	17.27	18.32	19.21	16.06	17.10	16.78	17.83	18.72
	4H	17.15	18.13	17.89	18.87	19.77	16.66	17.63	17.39	18.38	19.27
	6H	17.56	18.46	18.31	19.22	20.13	17.06	17.96	17.81	18.72	19.63
	8H	17.67	18.53	18.43	19.30	20.22	17.17	18.03	17.93	18.80	19.72
	12H	17.73	18.55	18.50	19.31	20.26	17.22	18.04	17.99	18.81	19.75
4H	2H	15.37	16.34	16.11	17.09	17.98	15.01	15.99	15.75	16.73	17.63
	3H	17.26	18.07	18.01	18.85	19.76	16.85	17.66	17.60	18.44	19.36
	4H	17.98	18.72	18.74	19.50	20.44	17.55	18.29	18.32	19.07	20.02
	6H	18.50	19.15	19.29	19.95	20.90	18.07	18.71	18.86	19.52	20.47
	8H	18.66	19.26	19.45	20.06	21.02	18.22	18.82	19.01	19.62	20.59
	12H	18.74	19.28	19.55	20.11	21.07	18.29	18.83	19.10	19.66	20.63
8H	4H	18.19	18.79	18.98	19.59	20.56	17.82	18.42	18.60	19.22	20.18
	6H	18.83	19.33	19.65	20.17	21.13	18.45	18.94	19.26	19.79	20.75
	8H	19.05	19.49	19.88	20.33	21.31	18.66	19.10	19.49	19.94	20.92
	12H	19.19	19.58	20.02	20.41	21.45	18.78	19.17	19.61	20.00	21.04
12H	4H	18.19	18.73	19.00	19.55	20.52	17.82	18.36	18.63	19.18	20.15
	6H	18.86	19.30	19.69	20.14	21.12	18.49	18.93	19.32	19.77	20.75
	8H	19.11	19.50	19.94	20.33	21.37	18.73	19.12	19.56	19.95	20.99