

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: P908635

Luminaire Tested: DFN2DIP-PN4F0-040D120US840-RLLONL

Issue Date: 11/21/2024

**Test Information**

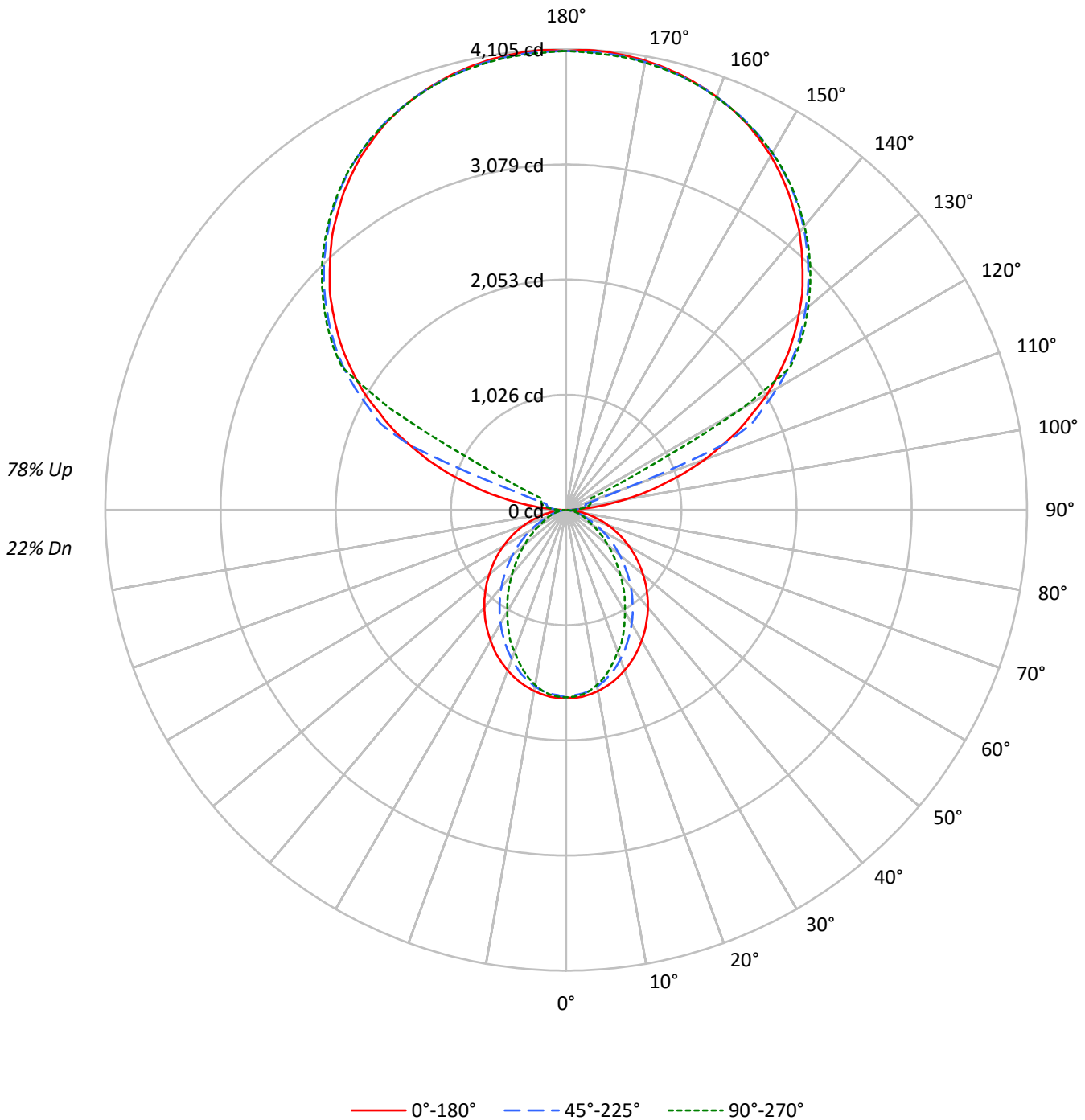
Test Method: LM-79-2019  
Report Number: P908635  
REPORT IS A COMBINATION OF REPORTS P901274 AND P898053  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-040D120US840-RLONL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15430.7 lumens  
Efficiency: N/A  
Efficacy: 112.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 136.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
Total Harmonic Distortion (THDi): 0.064  
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	101	101	101	101	89	89	89	89	68	68	68	49	49	49	31	31	31	31	31	31	22
1	92	88	84	81	81	78	75	72	60	58	56	43	42	41	27	27	26	26	26	26	19
2	84	77	71	66	74	68	64	60	52	49	47	38	36	34	24	23	22	22	22	22	16
3	76	68	61	55	68	60	55	50	46	43	39	34	31	29	22	20	19	19	19	19	14
4	70	60	52	47	62	53	47	42	41	37	34	30	27	25	20	18	17	17	17	17	12
5	64	53	46	40	57	48	41	36	37	32	29	27	24	22	18	16	15	15	15	15	11
6	59	48	40	35	52	43	36	31	33	29	25	24	21	19	16	14	13	13	13	13	10
7	54	43	35	30	48	38	32	27	30	25	22	22	19	17	15	13	12	12	12	12	9
8	50	39	32	27	45	35	29	24	27	23	20	20	17	15	14	12	10	10	10	10	8
9	47	35	28	23	42	32	26	21	25	20	17	19	16	13	12	11	9	9	9	9	7
10	44	32	25	21	39	29	23	19	23	19	16	17	14	12	12	10	9	9	9	9	6

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

	0°	45°	90°
0°	1219	1219	1219
5°	1221	1199	1207
10°	1209	1176	1168
15°	1192	1137	1108
20°	1170	1084	1033
25°	1147	1024	961
30°	1117	963	870
35°	1087	897	790
40°	1057	828	698
45°	1022	752	615
50°	986	676	534
55°	948	594	456
60°	904	508	375
65°	854	421	338
70°	793	340	306
75°	716	300	279
80°	605	252	243
85°	421	169	184

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2181 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	156.5	1.0
10°-20°	429.5	2.8
20°-30°	603.0	3.9
30°-40°	657.4	4.3
40°-50°	604.2	3.9
50°-60°	474.5	3.1
60°-70°	308.9	2.0
70°-80°	159.0	1.0
80°-90°	47.8	0.3
90°-100°	134.9	0.9
100°-110°	502.7	3.3
110°-120°	1333.3	8.6
120°-130°	2211.4	14.3
130°-140°	2349.0	15.2
140°-150°	2183.2	14.1
150°-160°	1755.2	11.4
160°-170°	1131.0	7.3
170°-180°	389.3	2.5
0°-30°	1189.0	7.7
0°-40°	1846.4	12.0
0°-60°	2925.1	19.0
0°-90°	3440.7	22.3
90°-120°	1970.9	12.8
90°-150°	8714.5	56.5
90°-180°	11990.0	77.7
0°-180°	15430.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	1670	1670	1670	1670	1670	
5°	1670	1662	1642	1656	1651	158
15°	1588	1571	1520	1491	1476	447
25°	1441	1393	1293	1231	1209	663
35°	1242	1165	1032	937	903	777
45°	1015	914	756	648	612	784
55°	772	654	491	400	372	690
65°	521	399	263	212	207	517
75°	278	172	121	110	109	294
85°	65	33	29	29	29	75
90°	3	35	59	74	80	14
95°	192	94	115	130	127	228
105°	900	989	181	213	225	961
115°	1702	1752	1826	456	243	1675
125°	2406	2444	2501	2521	2530	2146
135°	2977	3025	3051	3081	3075	2300
145°	3454	3451	3501	3522	3507	2160
155°	3803	3776	3812	3829	3806	1752
165°	4007	3989	3998	4019	3998	1132
175°	4098	4078	4084	4105	4075	390
180°	4090	4090	4090	4090	4090	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	1669.5	1669.5	1669.5	1669.5	1669.5
2.5°	1677.1	1669.5	1652.8	1668.1	1665.0
5°	1669.5	1661.9	1642.2	1655.9	1651.4
7.5°	1655.9	1646.9	1625.8	1631.6	1624.2
10°	1637.8	1627.2	1597.0	1592.4	1583.5
12.5°	1615.2	1601.5	1560.6	1551.7	1535.0
15°	1587.9	1571.2	1519.9	1491.3	1476.2
17.5°	1556.2	1532.0	1468.4	1435.3	1411.1
20°	1519.9	1489.7	1414.1	1376.4	1343.1
22.5°	1480.7	1445.9	1358.2	1306.9	1284.3
25°	1441.4	1393.0	1293.2	1231.4	1208.6
27.5°	1394.6	1343.1	1232.8	1161.9	1127.0
30°	1344.7	1287.2	1166.3	1089.3	1048.5
32.5°	1296.4	1226.8	1103.0	1012.3	974.4
35°	1242.0	1164.9	1032.0	936.8	903.4
37.5°	1189.1	1105.9	965.4	861.1	823.4
40°	1133.2	1042.6	896.0	788.7	749.4
42.5°	1075.7	979.1	826.5	714.6	676.9
45°	1015.3	914.0	755.5	648.1	611.9
47.5°	958.0	850.7	687.5	580.2	546.9
50°	894.4	787.2	621.0	516.6	485.0
52.5°	832.4	719.1	557.5	457.8	429.1
55°	772.0	654.2	491.0	400.4	371.7
57.5°	710.1	589.3	432.1	347.5	323.4
60°	646.6	525.7	370.1	293.2	269.0
62.5°	584.8	463.9	317.2	244.8	232.8
65°	521.3	398.8	262.9	211.6	206.9
67.5°	460.9	338.4	211.6	185.8	181.3
70°	397.4	279.5	175.2	160.2	154.0
72.5°	337.0	225.1	146.5	134.5	131.5
75°	277.9	172.2	120.9	110.3	108.9
77.5°	219.1	122.3	95.2	89.2	86.0
80°	164.6	87.7	72.4	66.6	66.6
82.5°	114.8	59.0	49.9	46.8	46.8
85°	64.9	33.2	28.7	28.7	28.7
87.5°	24.2	12.0	12.0	10.6	10.6
90°	2.8	35.4	59.1	74.1	79.8
92.5°	74.1	62.2	71.0	77.0	79.8
95°	192.2	94.5	115.2	130.4	127.2
97.5°	346.2	103.7	150.8	159.9	162.7
100°	523.9	118.5	168.6	192.2	198.2
102.5°	719.0	713.4	174.6	207.0	216.1
105°	899.6	988.6	180.7	213.0	224.9
107.5°	1109.7	1183.6	186.6	218.9	230.9
110°	1311.1	1373.0	518.0	222.1	233.7



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1500.6	1553.6	1503.4	227.7	236.8
115°	1701.5	1751.8	1825.9	455.8	242.9
117.5°	1876.2	1935.3	1985.9	1562.4	787.2
120°	2071.6	2115.9	2169.3	2204.8	1805.2
122.5°	2237.2	2284.6	2344.0	2361.6	2364.7
125°	2405.8	2444.5	2500.7	2521.4	2530.2
127.5°	2559.7	2601.2	2645.8	2675.3	2678.2
130°	2704.8	2752.3	2784.6	2817.3	2814.5
132.5°	2852.8	2891.4	2923.8	2950.5	2947.7
135°	2977.2	3024.6	3051.0	3080.9	3074.9
137.5°	3107.3	3142.7	3172.6	3202.1	3193.3
140°	3234.5	3258.3	3290.6	3317.4	3302.7
142.5°	3341.2	3362.0	3400.3	3423.8	3409.1
145°	3453.7	3450.6	3500.8	3521.6	3506.8
147.5°	3551.1	3542.3	3592.6	3607.3	3595.7
150°	3645.9	3625.2	3672.7	3690.3	3675.5
152.5°	3725.7	3702.2	3746.5	3764.4	3743.7
155°	3802.6	3776.3	3811.8	3829.4	3805.9
157.5°	3864.9	3841.3	3868.1	3888.8	3864.9
160°	3918.3	3900.4	3918.3	3935.8	3915.1
162.5°	3965.4	3947.9	3962.6	3983.3	3956.7
165°	4006.8	3989.3	3998.1	4018.9	3998.1
167.5°	4039.6	4021.6	4030.8	4051.5	4024.8
170°	4066.2	4048.3	4054.3	4075.0	4048.3
172.5°	4083.8	4066.2	4072.3	4093.0	4066.2
175°	4098.5	4077.8	4083.8	4104.6	4075.0
177.5°	4104.6	4083.8	4087.0	4107.7	4081.1
180°	4089.9	4089.9	4089.9	4089.9	4089.9



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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	4.42	5.06	5.58	6.21	7.83	0.38	1.03	1.55	2.18	3.80
	3H	6.08	6.66	7.26	7.82	9.45	1.56	2.13	2.73	3.29	4.93
	4H	6.68	7.23	7.87	8.39	10.03	2.00	2.55	3.18	3.70	5.34
	6H	7.10	7.60	8.29	8.76	10.41	2.31	2.82	3.50	3.97	5.62
	8H	7.22	7.70	8.41	8.87	10.52	2.40	2.88	3.59	4.05	5.69
	12H	7.28	7.73	8.47	8.90	10.56	2.43	2.89	3.63	4.06	5.72
4H	2H	4.41	4.96	5.60	6.12	7.76	0.95	1.50	2.15	2.66	4.30
	3H	6.23	6.68	7.42	7.87	9.52	2.29	2.75	3.48	3.93	5.58
	4H	6.91	7.33	8.11	8.51	10.17	2.83	3.25	4.03	4.42	6.09
	6H	7.42	7.78	8.62	8.97	10.63	3.24	3.60	4.44	4.79	6.45
	8H	7.59	7.93	8.79	9.11	10.79	3.37	3.70	4.56	4.89	6.56
	12H	7.68	7.99	8.90	9.18	10.86	3.42	3.73	4.64	4.92	6.60
8H	4H	6.87	7.20	8.07	8.39	10.06	3.10	3.43	4.30	4.62	6.29
	6H	7.43	7.71	8.65	8.93	10.60	3.61	3.89	4.83	5.12	6.79
	8H	7.65	7.89	8.87	9.09	10.78	3.80	4.04	5.02	5.25	6.94
	12H	7.78	7.99	9.01	9.19	10.92	3.92	4.13	5.14	5.33	7.05
12H	4H	6.81	7.12	8.02	8.31	9.99	3.10	3.40	4.31	4.59	6.27
	6H	7.41	7.65	8.63	8.85	10.54	3.66	3.90	4.88	5.11	6.80
	8H	7.62	7.83	8.84	9.03	10.75	3.87	4.08	5.09	5.28	7.00