

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: P903460

Luminaire Tested: DFN2DIP-PN4F0-120D110US830-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P903460
REPORT IS A COMBINATION OF REPORTS P899751 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-120D110US830-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

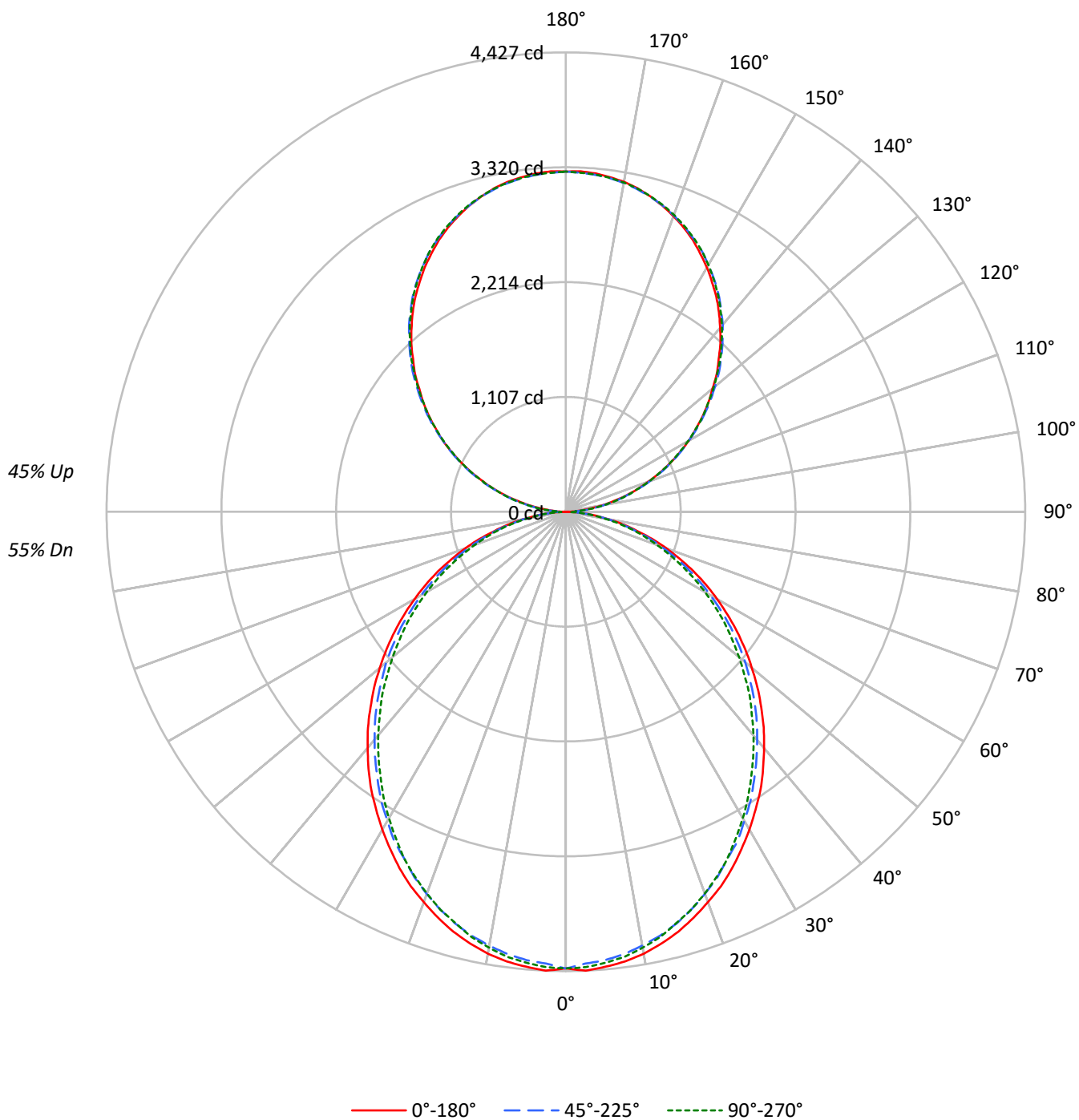
Lumens per Lamp: N/A
Luminaire Lumens: 20373.0 lumens
Efficiency: N/A
Efficacy: 93.5 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 217.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9781
Total Harmonic Distortion (THDi): 0.075
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	108	108	108	108		101	101	101	101		86	86	86		73	73	73		61	61	61
1	99	95	91	87		92	88	85	81		76	73	71		64	62	61		54	52	51
2	90	83	76	71		83	77	71	67		66	62	59		56	53	51		47	45	43
3	82	73	65	59		76	68	61	56		58	53	49		50	46	43		42	39	37
4	75	64	56	50		70	60	53	47		52	46	42		44	40	37		37	34	32
5	69	57	49	43		64	54	46	41		46	41	36		40	35	32		34	30	28
6	64	51	43	37		59	48	41	35		42	36	32		36	32	28		31	27	24
7	59	46	38	33		55	44	36	31		38	32	28		33	28	25		28	24	22
8	55	42	34	29		51	40	33	28		35	29	25		30	25	22		26	22	19
9	51	39	31	26		47	36	29	25		32	26	22		28	23	20		24	20	18
10	48	35	28	23		44	33	27	22		29	24	20		26	21	18		22	19	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3213	3213	3213
5°	3218	3168	3190
10°	3192	3126	3147
15°	3145	3075	3080
20°	3081	3004	3012
25°	3018	2919	2932
30°	2939	2840	2831
35°	2864	2746	2725
40°	2772	2652	2623
45°	2680	2557	2519
50°	2579	2458	2399
55°	2474	2343	2288
60°	2355	2207	2161
65°	2226	2066	2012
70°	2060	1894	1852
75°	1831	1689	1704
80°	1556	1427	1421
85°	1125	974	951

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2680 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	414.2	2.0
10°-20°	1165.5	5.7
20°-30°	1712.8	8.4
30°-40°	1989.3	9.8
40°-50°	1986.8	9.8
50°-60°	1732.4	8.5
60°-70°	1280.6	6.3
70°-80°	724.6	3.6
80°-90°	200.6	1.0
90°-100°	202.9	1.0
100°-110°	644.7	3.2
110°-120°	1103.3	5.4
120°-130°	1451.0	7.1
130°-140°	1628.6	8.0
140°-150°	1597.1	7.8
150°-160°	1339.7	6.6
160°-170°	888.5	4.4
170°-180°	310.5	1.5
0°-30°	3292.4	16.2
0°-40°	5281.7	25.9
0°-60°	9000.9	44.2
0°-90°	11206.7	55.0
90°-120°	1950.9	9.6
90°-150°	6627.6	32.5
90°-180°	9166.0	45.0
0°-180°	20373.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	4401	4401	4401	4401	4401	
5°	4401	4384	4338	4371	4363	418
15°	4190	4164	4109	4126	4105	1180
25°	3792	3758	3686	3694	3686	1745
35°	3271	3229	3161	3136	3115	2043
45°	2662	2632	2569	2522	2505	2054
55°	2015	1989	1938	1888	1866	1801
65°	1359	1333	1291	1253	1232	1343
75°	711	703	681	656	664	759
85°	173	169	165	152	148	193
90°	3	36	97	91	94	20
95°	144	172	177	177	172	161
105°	595	603	609	614	614	628
115°	1107	1123	1118	1115	1107	1095
125°	1610	1635	1627	1618	1615	1439
135°	2083	2114	2119	2116	2109	1610
145°	2529	2548	2564	2567	2556	1580
155°	2892	2899	2908	2922	2913	1331
165°	3146	3142	3142	3162	3148	887
175°	3273	3265	3259	3279	3262	311
180°	3279	3279	3279	3279	3279	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	4401.0	4401.0	4401.0	4401.0	4401.0
2.5°	4426.6	4405.4	4358.8	4401.0	4392.9
5°	4401.0	4384.3	4337.7	4371.3	4363.2
7.5°	4371.3	4346.2	4299.5	4333.6	4325.1
10°	4325.1	4295.4	4244.7	4278.4	4265.9
12.5°	4261.3	4236.2	4185.5	4206.6	4198.0
15°	4189.5	4164.3	4109.1	4126.2	4105.1
17.5°	4100.6	4075.5	4020.2	4041.3	4020.2
20°	4003.2	3978.0	3918.8	3931.3	3914.8
22.5°	3906.2	3868.0	3812.8	3812.8	3804.3
25°	3791.7	3758.0	3686.2	3694.3	3686.2
27.5°	3664.6	3635.0	3580.2	3567.6	3546.6
30°	3538.0	3503.9	3440.6	3428.0	3411.0
32.5°	3402.4	3377.3	3309.5	3283.9	3266.9
35°	3271.3	3229.1	3161.3	3135.7	3114.6
37.5°	3123.1	3085.0	3017.2	2987.6	2966.5
40°	2971.0	2936.9	2869.0	2831.3	2814.2
42.5°	2822.8	2788.7	2721.3	2678.7	2653.5
45°	2662.0	2632.4	2568.6	2522.4	2505.4
47.5°	2505.4	2475.7	2407.9	2361.3	2336.1
50°	2340.1	2319.0	2259.7	2200.5	2179.3
52.5°	2179.3	2149.8	2095.0	2048.2	2018.6
55°	2014.6	1989.0	1938.2	1887.5	1866.4
57.5°	1849.4	1828.2	1773.0	1722.3	1705.2
60°	1684.1	1667.5	1608.3	1561.6	1549.0
62.5°	1523.4	1493.7	1451.6	1409.4	1392.3
65°	1358.7	1333.0	1290.8	1252.6	1231.6
67.5°	1189.4	1167.8	1130.1	1100.5	1083.5
70°	1032.6	1015.6	977.4	947.8	931.2
72.5°	871.9	854.9	833.8	804.2	791.5
75°	710.8	702.7	681.1	656.0	664.5
77.5°	567.0	550.0	541.5	528.9	516.3
80°	423.4	418.9	410.4	397.8	389.3
82.5°	287.8	287.8	283.8	266.7	266.7
85°	173.3	169.3	165.2	152.2	148.2
87.5°	76.3	67.8	59.3	46.7	42.2
90°	2.9	35.6	96.9	91.0	93.9
92.5°	61.3	83.0	86.0	89.0	89.0
95°	144.3	172.0	176.9	176.9	172.0
97.5°	240.3	265.9	276.8	276.8	276.8
100°	350.9	373.6	381.5	381.5	378.6
102.5°	467.6	484.4	495.3	498.2	495.3
105°	595.1	603.0	609.0	613.9	613.9
107.5°	721.6	733.5	733.5	735.5	721.6
110°	844.2	860.1	860.1	860.1	852.2



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	976.7	993.4	990.5	982.6	976.7
115°	1107.2	1122.9	1118.0	1115.1	1107.2
117.5°	1236.7	1258.4	1244.5	1236.7	1228.8
120°	1367.2	1388.9	1367.2	1367.2	1358.3
122.5°	1485.8	1513.4	1499.6	1491.7	1485.8
125°	1610.3	1635.0	1627.1	1618.3	1615.2
127.5°	1731.9	1762.6	1751.7	1739.8	1731.9
130°	1845.6	1881.2	1876.2	1870.3	1859.4
132.5°	1973.1	2000.8	2002.8	1989.0	1981.0
135°	2082.8	2113.5	2119.4	2116.5	2108.6
137.5°	2205.5	2230.1	2235.1	2233.1	2221.3
140°	2313.2	2337.9	2351.7	2351.7	2340.9
142.5°	2423.9	2448.6	2456.5	2459.5	2448.6
145°	2528.7	2548.4	2564.3	2567.2	2556.4
147.5°	2622.6	2647.3	2659.2	2664.1	2653.3
150°	2719.5	2736.3	2747.1	2756.1	2747.1
152.5°	2805.5	2822.3	2836.1	2847.0	2836.1
155°	2891.5	2899.4	2908.3	2922.2	2913.2
157.5°	2965.6	2971.6	2976.5	2996.2	2982.4
160°	3031.9	3037.8	3040.7	3057.6	3045.7
162.5°	3093.1	3093.1	3096.2	3114.9	3101.1
165°	3145.5	3142.5	3142.5	3162.3	3148.5
167.5°	3193.0	3184.1	3184.1	3203.9	3190.0
170°	3228.6	3220.7	3217.7	3237.4	3220.7
172.5°	3253.3	3245.4	3242.4	3262.2	3245.4
175°	3273.1	3265.2	3259.2	3279.0	3262.2
177.5°	3283.9	3276.0	3270.1	3286.9	3270.1
180°	3279.0	3279.0	3279.0	3279.0	3279.0

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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	11.78	12.69	12.70	13.62	14.82	11.34	12.25	12.26	13.18	14.38
	3H	13.45	14.26	14.37	15.21	16.43	12.97	13.78	13.89	14.72	15.94
	4H	14.04	14.81	14.98	15.76	16.99	13.55	14.33	14.49	15.27	16.50
	6H	14.45	15.16	15.40	16.11	17.35	13.95	14.66	14.90	15.62	16.86
	8H	14.55	15.23	15.51	16.20	17.44	14.06	14.74	15.02	15.71	16.95
	12H	14.60	15.25	15.57	16.21	17.48	14.10	14.75	15.07	15.71	16.98
4H	2H	12.25	13.02	13.19	13.97	15.20	11.90	12.67	12.84	13.62	14.85
	3H	14.12	14.77	15.08	15.74	16.99	13.72	14.36	14.68	15.34	16.59
	4H	14.84	15.43	15.81	16.40	17.67	14.42	15.01	15.39	15.98	17.25
	6H	15.36	15.87	16.34	16.86	18.13	14.94	15.45	15.92	16.44	17.71
	8H	15.51	15.99	16.49	16.98	18.26	15.09	15.56	16.07	16.55	17.83
	12H	15.59	16.02	16.59	17.02	18.31	15.15	15.58	16.15	16.58	17.87
8H	4H	15.04	15.52	16.02	16.50	17.79	14.67	15.15	15.65	16.13	17.42
	6H	15.68	16.07	16.68	17.10	18.38	15.30	15.69	16.31	16.72	18.01
	8H	15.90	16.25	16.92	17.26	18.56	15.52	15.86	16.53	16.88	18.18
	12H	16.04	16.34	17.05	17.35	18.70	15.64	15.94	16.65	16.95	18.30
12H	4H	15.03	15.46	16.03	16.46	17.75	14.67	15.10	15.67	16.10	17.39
	6H	15.71	16.06	16.72	17.07	18.37	15.34	15.69	16.36	16.71	18.01
	8H	15.96	16.26	16.97	17.27	18.62	15.58	15.89	16.60	16.90	18.24