

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: P906961

Luminaire Tested: DFN2DIP-SQ4F0-160D080US835-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906961
REPORT IS A COMBINATION OF REPORTS P901631 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D080US835-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

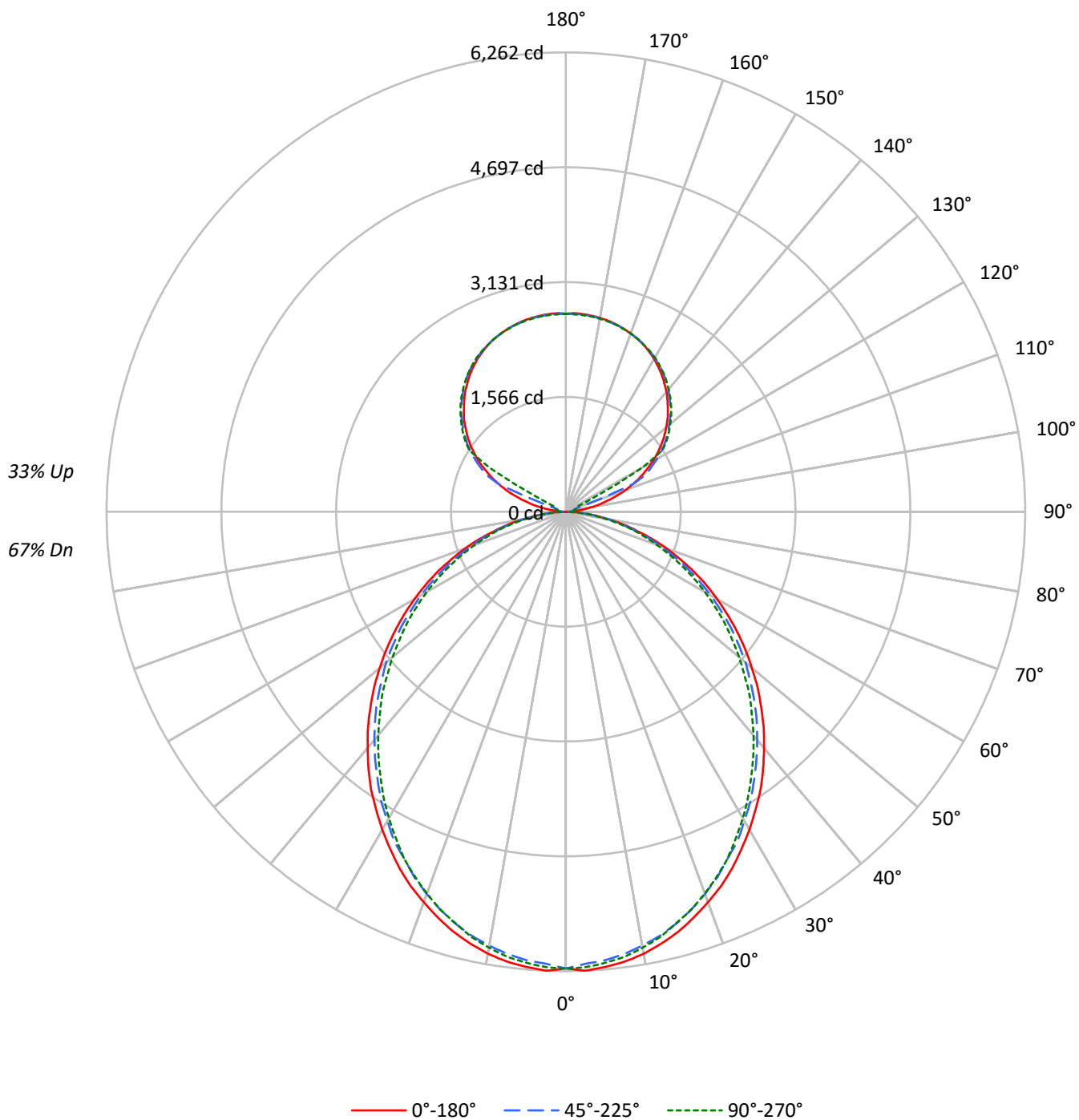
Lumens per Lamp: N/A
Luminaire Lumens: 23760.0 lumens
Efficiency: N/A
Efficacy: 105.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 226.2
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
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	111	111	111	111	105	105	105	105	93	93	93		82	82	82		71
1	102	97	93	90	95	92	88	85	81	79	76		72	70	68		63
2	92	85	79	73	87	80	75	70	71	67	63		63	60	57		56
3	84	75	67	61	79	71	64	58	63	58	53		56	52	48		49
4	77	66	58	52	72	63	55	50	56	50	45		50	45	41		44
5	71	59	51	44	67	56	48	43	50	44	39		45	40	36		40
6	66	53	45	39	62	50	43	37	45	39	34		41	35	32		36
7	61	48	40	34	57	46	38	33	41	35	30		37	32	28		33
8	56	44	36	30	53	42	34	29	38	31	27		34	29	25		30
9	53	40	32	27	50	38	31	26	35	29	24		31	26	23		28
10	49	37	29	24	46	35	28	24	32	26	22		29	24	20		26

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4368	4368	4368
5°	4375	4308	4338
10°	4340	4251	4280
15°	4276	4182	4190
20°	4190	4086	4097
25°	4104	3970	3990
30°	3996	3863	3853
35°	3894	3736	3708
40°	3769	3608	3570
45°	3644	3480	3429
50°	3507	3346	3266
55°	3364	3190	3116
60°	3202	3005	2945
65°	3025	2814	2742
70°	2800	2581	2525
75°	2489	2302	2327
80°	2114	1947	1944
85°	1528	1332	1306

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3644 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	586.0	2.5
10°-20°	1648.7	6.9
20°-30°	2422.9	10.2
30°-40°	2814.1	11.8
40°-50°	2810.6	11.8
50°-60°	2450.7	10.3
60°-70°	1811.6	7.6
70°-80°	1025.0	4.3
80°-90°	275.3	1.2
90°-100°	89.0	0.4
100°-110°	331.9	1.4
110°-120°	880.2	3.7
120°-130°	1459.9	6.1
130°-140°	1550.7	6.5
140°-150°	1441.2	6.1
150°-160°	1158.7	4.9
160°-170°	746.6	3.1
170°-180°	257.0	1.1
0°-30°	4657.5	19.6
0°-40°	7471.6	31.4
0°-60°	12732.9	53.6
0°-90°	15844.7	66.7
90°-120°	1301.1	5.5
90°-150°	5752.9	24.2
90°-180°	7915.0	33.3
0°-180°	23760.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6226	6226	6226	6226	6226	
5°	6226	6202	6136	6184	6172	591
15°	5926	5891	5813	5837	5807	1669
25°	5364	5316	5214	5226	5214	2468
35°	4628	4568	4472	4436	4406	2890
45°	3766	3724	3634	3568	3544	2906
55°	2850	2814	2742	2670	2640	2548
65°	1922	1886	1826	1772	1742	1900
75°	1005	994	964	928	940	1073
85°	245	239	234	215	210	273
90°	2	23	39	49	53	22
95°	127	62	76	86	84	150
105°	594	653	119	141	148	635
115°	1123	1156	1205	301	160	1106
125°	1588	1614	1651	1664	1670	1416
135°	1965	1997	2014	2034	2030	1518
145°	2280	2278	2311	2325	2315	1426
155°	2510	2493	2516	2528	2512	1157
165°	2645	2634	2639	2653	2639	747
175°	2706	2692	2696	2710	2690	258
180°	2700	2700	2700	2700	2700	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6225.7	6225.7	6225.7	6225.7	6225.7
2.5°	6261.9	6232.0	6166.0	6225.7	6214.2
5°	6225.7	6202.2	6136.1	6183.8	6172.3
7.5°	6183.8	6148.2	6082.1	6130.4	6118.3
10°	6118.3	6076.4	6004.7	6052.3	6034.5
12.5°	6028.2	5992.6	5920.8	5950.7	5938.6
15°	5926.5	5891.0	5812.8	5837.0	5807.1
17.5°	5800.8	5765.2	5687.1	5716.9	5687.1
20°	5662.9	5627.4	5543.5	5561.3	5537.8
22.5°	5525.8	5471.8	5393.6	5393.6	5381.6
25°	5363.8	5316.2	5214.5	5226.0	5214.5
27.5°	5184.0	5142.1	5064.6	5046.9	5017.0
30°	5004.9	4956.7	4867.1	4849.3	4825.2
32.5°	4813.1	4777.6	4681.6	4645.4	4621.3
35°	4627.7	4568.0	4472.0	4435.8	4406.0
37.5°	4418.1	4364.1	4268.2	4226.2	4196.4
40°	4202.7	4154.5	4058.6	4005.2	3981.1
42.5°	3993.2	3944.9	3849.6	3789.3	3753.7
45°	3765.8	3723.8	3633.7	3568.2	3544.1
47.5°	3544.1	3502.2	3406.3	3340.2	3304.7
50°	3310.4	3280.5	3196.7	3112.8	3083.0
52.5°	3083.0	3041.1	2963.6	2897.5	2855.6
55°	2849.9	2813.7	2741.9	2670.1	2640.3
57.5°	2616.2	2586.3	2508.2	2436.4	2412.3
60°	2382.4	2358.9	2275.1	2209.0	2191.2
62.5°	2155.0	2113.1	2053.4	1993.7	1969.6
65°	1921.9	1885.7	1826.0	1772.1	1742.2
67.5°	1682.5	1652.0	1598.7	1556.7	1532.6
70°	1460.8	1436.7	1382.7	1340.8	1317.3
72.5°	1233.4	1209.3	1179.5	1137.5	1119.8
75°	1005.4	994.0	963.5	927.9	940.0
77.5°	802.2	778.1	766.0	748.2	730.4
80°	598.9	592.6	580.5	562.7	550.7
82.5°	407.1	407.1	401.4	377.3	377.3
85°	245.2	239.4	233.7	215.3	209.6
87.5°	108.0	95.9	83.8	66.1	59.7
90°	1.9	23.4	39.0	48.9	52.7
92.5°	48.9	41.1	46.9	50.8	52.7
95°	126.9	62.4	76.1	86.1	84.0
97.5°	228.5	68.4	99.5	105.6	107.4
100°	345.9	78.2	111.4	126.9	130.8
102.5°	474.7	470.9	115.3	136.6	142.7
105°	593.9	652.6	119.2	140.6	148.5
107.5°	732.6	781.3	123.2	144.5	152.4
110°	865.6	906.4	342.0	146.6	154.3

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	990.6	1025.6	992.5	150.3	156.4
115°	1123.3	1156.5	1205.4	300.9	160.3
117.5°	1238.6	1277.6	1311.0	1031.4	519.7
120°	1367.6	1396.8	1432.1	1455.5	1191.7
122.5°	1476.8	1508.2	1547.4	1559.0	1561.1
125°	1588.2	1613.7	1650.8	1664.5	1670.3
127.5°	1689.8	1717.2	1746.7	1766.1	1768.0
130°	1785.6	1816.9	1838.3	1859.9	1858.0
132.5°	1883.3	1908.8	1930.2	1947.8	1945.9
135°	1965.4	1996.7	2014.1	2033.9	2029.9
137.5°	2051.3	2074.7	2094.4	2113.9	2108.1
140°	2135.2	2151.0	2172.4	2190.0	2180.2
142.5°	2205.8	2219.4	2244.7	2260.3	2250.5
145°	2280.0	2277.9	2311.1	2324.8	2315.0
147.5°	2344.3	2338.5	2371.6	2381.4	2373.7
150°	2406.9	2393.2	2424.5	2436.1	2426.4
152.5°	2459.6	2444.0	2473.2	2485.1	2471.4
155°	2510.4	2493.0	2516.4	2528.0	2512.5
157.5°	2551.4	2535.9	2553.5	2567.2	2551.4
160°	2586.7	2574.9	2586.7	2598.3	2584.6
162.5°	2617.8	2606.2	2615.9	2629.6	2612.0
165°	2645.2	2633.6	2639.4	2653.0	2639.4
167.5°	2666.7	2654.9	2660.9	2674.6	2657.0
170°	2684.4	2672.5	2676.5	2690.2	2672.5
172.5°	2696.0	2684.4	2688.3	2702.0	2684.4
175°	2705.7	2692.0	2696.0	2709.6	2690.2
177.5°	2709.6	2696.0	2698.0	2711.7	2694.1
180°	2699.9	2699.9	2699.9	2699.9	2699.9

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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	13.82	14.85	14.62	15.68	16.69	13.38	14.41	14.17	15.23	16.24
	3H	15.50	16.43	16.31	17.26	18.30	15.01	15.94	15.82	16.77	17.81
	4H	16.10	16.97	16.93	17.81	18.86	15.60	16.48	16.43	17.32	18.37
	6H	16.51	17.32	17.35	18.16	19.23	16.01	16.82	16.85	17.66	18.73
	8H	16.62	17.39	17.47	18.26	19.32	16.12	16.89	16.97	17.75	18.82
	12H	16.68	17.41	17.53	18.27	19.36	16.17	16.90	17.02	17.76	18.85
4H	2H	14.30	15.18	15.14	16.02	17.07	13.95	14.82	14.78	15.66	16.71
	3H	16.19	16.92	17.03	17.79	18.86	15.78	16.51	16.63	17.39	18.45
	4H	16.91	17.58	17.77	18.45	19.54	16.49	17.16	17.35	18.03	19.12
	6H	17.44	18.02	18.32	18.91	20.01	17.01	17.59	17.88	18.48	19.58
	8H	17.60	18.14	18.48	19.03	20.14	17.16	17.70	18.04	18.59	19.70
	12H	17.68	18.17	18.58	19.08	20.19	17.23	17.72	18.13	18.63	19.74
8H	4H	17.12	17.66	18.00	18.55	19.66	16.75	17.29	17.62	18.18	19.29
	6H	17.77	18.21	18.67	19.14	20.25	17.38	17.83	18.29	18.76	19.87
	8H	17.99	18.39	18.91	19.31	20.44	17.60	18.00	18.52	18.92	20.05
	12H	18.14	18.48	19.05	19.40	20.58	17.72	18.07	18.64	18.99	20.17
12H	4H	17.12	17.60	18.02	18.51	19.63	16.75	17.24	17.65	18.14	19.26
	6H	17.80	18.20	18.71	19.12	20.25	17.43	17.82	18.34	18.75	19.87
	8H	18.05	18.40	18.97	19.32	20.50	17.67	18.02	18.59	18.94	20.12