

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: P906977

Luminaire Tested: DFN2DIP-SQ4F0-160D120US835-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906977
REPORT IS A COMBINATION OF REPORTS P901703 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D120US835-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

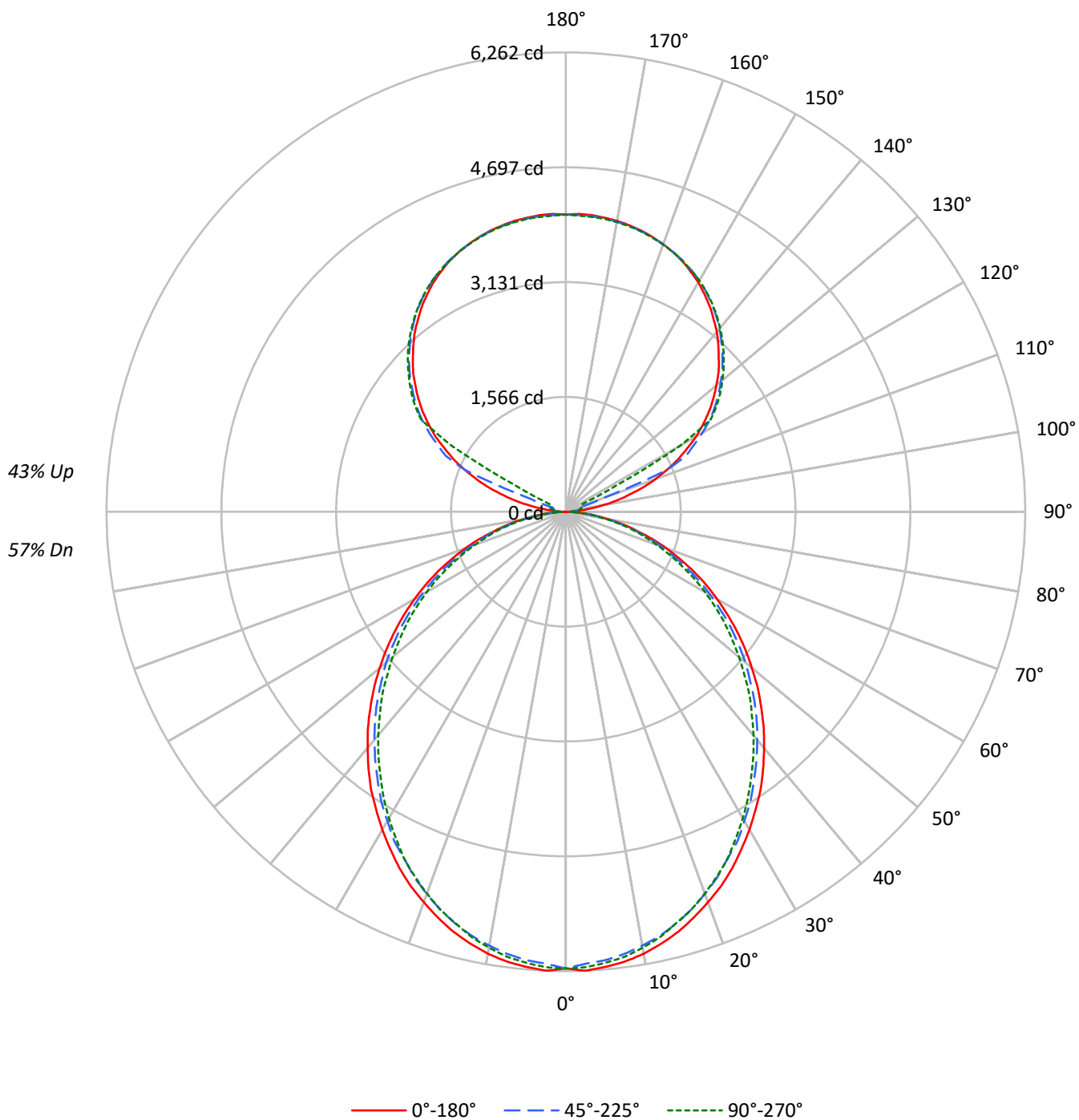
Lumens per Lamp: N/A
Luminaire Lumens: 27720.0 lumens
Efficiency: N/A
Efficacy: 107.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 256.8
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	30	10
RCR																	
0	109	109	109	109	101	101	101	101	87	87	87	74	74	74	63	63	63
1	99	95	91	88	92	89	85	82	77	74	72	66	64	62	55	54	53
2	91	83	77	72	84	77	72	67	67	63	59	58	55	52	49	47	45
3	83	73	66	60	77	68	62	56	59	54	50	51	47	44	43	40	38
4	76	65	57	50	70	61	53	48	53	47	43	45	41	38	39	35	33
5	69	58	49	43	64	54	47	41	47	41	37	41	36	33	35	31	29
6	64	52	44	38	59	49	41	36	43	37	32	37	32	29	32	28	25
7	59	47	39	33	55	44	37	32	39	33	28	34	29	25	29	25	22
8	55	43	35	29	51	40	33	28	35	29	25	31	26	23	27	23	20
9	51	39	31	26	48	37	30	25	32	27	23	28	24	20	25	21	18
10	48	36	28	24	45	34	27	22	30	24	20	26	22	18	23	19	17

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	2.1
10°-20°	1648.7	5.9
20°-30°	2422.9	8.7
30°-40°	2814.1	10.2
40°-50°	2810.6	10.1
50°-60°	2450.7	8.8
60°-70°	1811.6	6.5
70°-80°	1025.0	3.7
80°-90°	277.6	1.0
90°-100°	133.5	0.5
100°-110°	497.8	1.8
110°-120°	1320.3	4.8
120°-130°	2189.8	7.9
130°-140°	2326.1	8.4
140°-150°	2161.8	7.8
150°-160°	1738.1	6.3
160°-170°	1119.9	4.0
170°-180°	385.5	1.4
0°-30°	4657.5	16.8
0°-40°	7471.6	27.0
0°-60°	12732.9	45.9
0°-90°	15847.1	57.2
90°-120°	1951.7	7.0
90°-150°	8629.4	31.1
90°-180°	11873.0	42.8
0°-180°	27720.0	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°	3	35	58	73	79	26
95°	190	94	114	129	126	225
105°	891	979	179	211	223	952
115°	1685	1735	1808	451	240	1659
125°	2382	2421	2476	2497	2506	2125
135°	2948	2995	3021	3051	3045	2277
145°	3420	3417	3467	3487	3472	2139
155°	3766	3739	3775	3792	3769	1735
165°	3968	3950	3959	3980	3959	1121
175°	4058	4038	4044	4064	4035	386
180°	4050	4050	4050	4050	4050	

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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°	2.8	35.1	58.5	73.4	79.0
92.5°	73.4	61.6	70.3	76.2	79.0
95°	190.3	93.6	114.1	129.1	126.0
97.5°	342.8	102.7	149.3	158.3	161.1
100°	518.8	117.3	167.0	190.3	196.3
102.5°	712.0	706.4	172.9	205.0	214.0
105°	890.8	978.9	178.9	210.9	222.7
107.5°	1098.9	1172.0	184.8	216.8	228.6
110°	1298.3	1359.6	512.9	219.9	231.4



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1485.9	1538.4	1488.7	225.5	234.5
115°	1684.9	1734.7	1808.1	451.3	240.5
117.5°	1857.9	1916.4	1966.5	1547.1	779.5
120°	2051.4	2095.2	2148.1	2183.3	1787.6
122.5°	2215.3	2262.3	2321.1	2338.5	2341.6
125°	2382.3	2420.6	2476.3	2496.8	2505.5
127.5°	2534.7	2575.8	2620.0	2649.2	2652.0
130°	2678.4	2725.4	2757.4	2789.8	2787.0
132.5°	2824.9	2863.2	2895.2	2921.7	2918.9
135°	2948.1	2995.1	3021.2	3050.8	3044.9
137.5°	3076.9	3112.0	3141.6	3170.8	3162.1
140°	3202.9	3226.5	3258.5	3285.0	3270.4
142.5°	3308.6	3329.2	3367.1	3390.4	3375.8
145°	3420.0	3416.9	3466.6	3487.2	3472.5
147.5°	3516.4	3507.7	3557.5	3572.1	3560.6
150°	3610.3	3589.8	3636.8	3654.2	3639.6
152.5°	3689.3	3666.0	3709.9	3727.6	3707.1
155°	3765.5	3739.4	3774.6	3792.0	3768.7
157.5°	3827.1	3803.8	3830.3	3850.8	3827.1
160°	3880.0	3862.3	3880.0	3897.4	3876.9
162.5°	3926.7	3909.3	3923.9	3944.4	3918.0
165°	3967.7	3950.3	3959.0	3979.6	3959.0
167.5°	4000.1	3982.3	3991.4	4011.9	3985.5
170°	4026.5	4008.8	4014.7	4035.2	4008.8
172.5°	4043.9	4026.5	4032.5	4053.0	4026.5
175°	4058.5	4038.0	4043.9	4064.5	4035.2
177.5°	4064.5	4043.9	4047.1	4067.6	4041.2
180°	4049.9	4049.9	4049.9	4049.9	4049.9

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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	13.04	13.97	13.94	14.89	16.05	12.60	13.53	13.49	14.44	15.61
	3H	14.71	15.55	15.62	16.47	17.66	14.22	15.06	15.13	15.98	17.17
	4H	15.31	16.10	16.23	17.02	18.22	14.81	15.60	15.73	16.53	17.73
	6H	15.71	16.44	16.65	17.38	18.59	15.21	15.94	16.15	16.88	18.09
	8H	15.82	16.52	16.76	17.47	18.68	15.32	16.01	16.26	16.97	18.18
	12H	15.88	16.53	16.82	17.48	18.72	15.37	16.02	16.31	16.97	18.21
4H	2H	13.51	14.30	14.44	15.23	16.43	13.16	13.95	14.08	14.88	16.08
	3H	15.39	16.05	16.33	17.01	18.22	14.98	15.64	15.92	16.60	17.81
	4H	16.11	16.71	17.06	17.67	18.90	15.69	16.29	16.63	17.24	18.48
	6H	16.63	17.15	17.59	18.13	19.37	16.20	16.72	17.16	17.70	18.94
	8H	16.79	17.27	17.75	18.24	19.50	16.35	16.84	17.31	17.81	19.06
	12H	16.87	17.30	17.85	18.29	19.55	16.42	16.85	17.40	17.84	19.10
8H	4H	16.31	16.80	17.28	17.77	19.02	15.94	16.42	16.90	17.39	18.64
	6H	16.95	17.35	17.94	18.37	19.62	16.57	16.97	17.56	17.98	19.23
	8H	17.18	17.53	18.17	18.53	19.80	16.78	17.14	17.78	18.14	19.41
	12H	17.31	17.63	18.31	18.62	19.94	16.90	17.22	17.90	18.21	19.53
12H	4H	16.30	16.74	17.28	17.73	18.99	15.93	16.37	16.92	17.36	18.62
	6H	16.98	17.34	17.98	18.34	19.61	16.61	16.97	17.61	17.97	19.24
	8H	17.23	17.54	18.23	18.54	19.85	16.85	17.16	17.85	18.16	19.47