

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P242978

Luminaire Tested: **S121DR-H490D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242978
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H490D830-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1809.0 lumens
Efficiency: N/A
Efficacy: 105.2 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

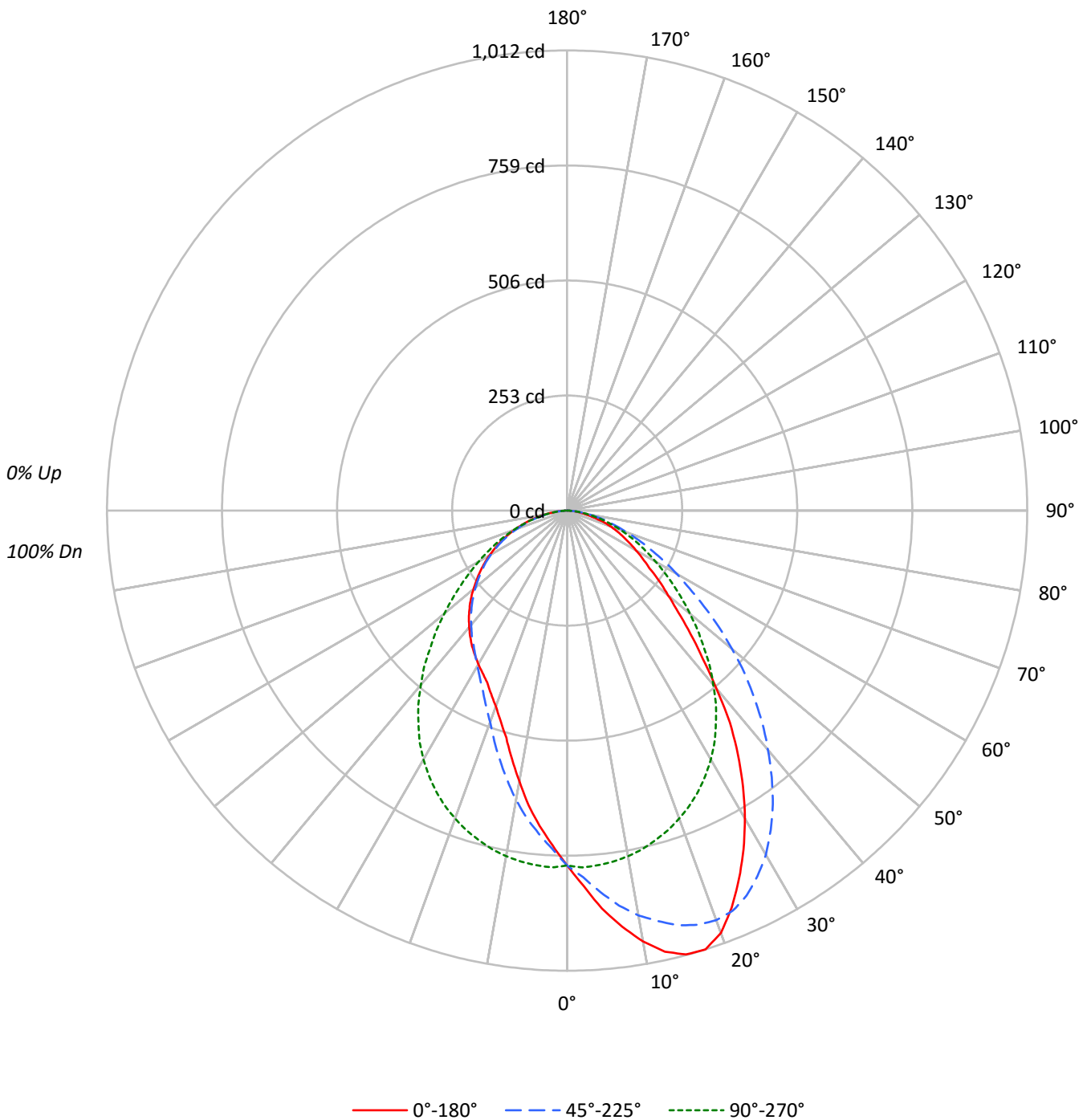
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88					86				
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75					73				
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65					63				
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57					54				
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50					48				
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44					42				
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40					38				
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36					34				
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33					31				
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	23126	23126	23126
5°	26129	23289	20692
10°	28946	23218	18187
15°	30997	23015	15865
20°	31169	22718	14444
25°	29237	22290	13620
30°	26748	21619	13354
35°	23685	20628	13184
40°	19738	19347	12957
45°	16091	17800	12717
50°	13354	16221	12400
55°	11427	14707	12078
60°	10353	13316	11692
65°	9563	12115	11281
70°	8819	10916	10612
75°	7121	9674	9788
80°	5682	7832	8361
85°	4284	5779	6833



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	74.6	4.1
10°-20°	213.6	11.8
20°-30°	311.0	17.2
30°-40°	346.7	19.2
40°-50°	320.6	17.7
50°-60°	255.4	14.1
60°-70°	174.8	9.7
70°-80°	90.8	5.0
80°-90°	21.5	1.2
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	599.2	33.1
0°-40°	946.0	52.3
0°-60°	1522.0	84.1
0°-90°	1809.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1809.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	780	780	780	780	780	
5°	878	842	783	713	696	86
15°	1010	944	750	570	517	283
25°	894	934	682	438	417	410
35°	655	789	570	359	364	406
45°	384	581	425	297	304	299
55°	221	367	285	228	234	202
65°	136	203	173	156	161	136
75°	62	91	84	80	86	68
85°	13	17	17	18	20	15
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5
2.5°	825.8	825.8	823.6	824.5	823.2	821.0	817.6	813.8	809.1	807.2	806.3
5°	878.5	879.8	878.2	875.1	874.5	871.9	864.4	860.0	849.9	842.1	839.6
7.5°	922.5	924.7	924.7	919.1	916.6	910.3	904.9	897.7	885.1	876.3	869.1
10°	962.1	963.1	959.6	956.5	951.4	946.4	937.3	928.2	914.7	904.0	892.1
12.5°	993.5	995.4	992.9	987.9	981.9	975.3	964.0	952.4	939.2	924.7	911.8
15°	1010.5	1013.3	1013.7	1009.6	1005.2	997.3	989.1	976.6	962.1	944.2	923.2
17.5°	1011.8	1013.0	1014.0	1010.8	1008.0	1005.2	997.0	986.6	972.8	955.2	935.7
20°	988.5	991.3	994.5	991.7	992.9	992.9	989.5	984.1	972.8	958.7	939.8
22.5°	945.2	951.8	955.8	958.7	961.5	965.6	969.7	967.2	962.8	952.4	935.4
25°	894.3	899.6	907.4	910.0	912.2	924.1	931.3	936.4	936.4	934.2	922.8
27.5°	840.2	843.7	850.3	859.1	867.2	874.5	889.5	899.0	906.5	906.5	900.5
30°	781.8	786.8	794.6	800.6	810.7	825.4	838.0	849.3	866.6	874.1	872.9
32.5°	720.2	725.2	733.4	738.4	752.9	764.8	784.3	801.9	821.7	833.0	839.9
35°	654.8	655.1	669.0	677.1	689.7	704.5	728.3	748.1	769.8	788.7	803.4
37.5°	587.6	587.3	597.0	611.5	621.5	642.3	666.8	688.8	718.9	739.0	762.3
40°	510.3	516.9	525.1	538.2	555.5	580.0	603.3	631.9	662.0	687.2	712.0
42.5°	441.2	446.5	459.7	474.5	493.0	513.7	542.0	573.8	603.3	636.0	663.6
45°	384.0	386.8	394.7	406.6	426.1	449.6	479.2	512.8	547.7	581.0	611.8
47.5°	331.2	339.7	343.7	354.7	368.9	390.9	421.7	451.8	492.1	529.1	562.8
50°	289.7	291.3	298.5	306.7	323.3	339.7	362.9	394.0	431.4	473.2	507.5
52.5°	255.8	255.1	261.1	268.3	280.0	297.2	317.4	347.5	379.3	420.7	458.1
55°	221.2	224.3	227.2	234.4	244.8	258.0	274.9	300.4	330.2	367.0	406.3
57.5°	197.3	197.6	199.2	205.2	212.1	222.5	238.8	260.5	287.2	319.2	357.3
60°	174.7	175.0	177.8	179.7	184.4	193.2	205.8	223.7	247.3	278.1	311.4
62.5°	155.2	155.5	157.1	159.0	163.4	166.8	177.5	192.9	212.1	239.4	268.0
65°	136.4	136.7	136.7	139.2	142.0	145.2	152.7	162.4	181.0	202.7	228.1
67.5°	118.1	120.0	119.4	121.3	123.8	125.4	130.7	139.5	152.1	170.3	192.3
70°	101.8	101.5	102.4	103.4	104.3	106.8	110.3	116.3	126.9	139.8	159.3
72.5°	84.2	82.3	83.6	84.8	86.4	88.3	91.1	95.5	103.7	114.1	128.5
75°	62.2	61.3	63.2	63.5	66.3	68.8	72.0	76.4	82.3	91.1	100.5
77.5°	45.2	46.5	47.1	47.8	48.1	50.9	54.4	58.1	61.6	69.8	77.0
80°	33.3	33.3	33.6	34.2	34.9	35.5	37.7	40.2	43.0	48.1	55.3
82.5°	23.3	22.9	22.9	23.3	23.6	24.2	25.1	26.1	28.6	31.1	34.9
85°	12.6	12.9	13.2	12.6	12.9	13.2	13.8	14.8	15.4	17.3	18.9
87.5°	4.4	5.3	5.0	5.0	5.3	5.3	5.3	6.0	6.0	6.0	6.9
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5
2.5°	805.3	804.4	801.9	796.8	793.4	787.1	785.8	785.5	779.9	771.4	770.8
5°	835.2	828.0	822.0	813.2	804.4	793.7	787.4	783.0	773.0	760.4	754.7
7.5°	862.5	852.1	839.9	826.1	813.2	798.1	787.1	778.3	763.5	747.5	737.8
10°	884.5	871.6	856.2	837.7	820.1	800.3	784.9	771.7	752.2	732.4	719.2
12.5°	899.6	885.1	867.5	845.9	824.5	801.9	779.6	762.9	738.4	715.5	698.5
15°	916.6	892.7	874.5	849.9	824.8	797.8	774.2	750.3	722.1	696.3	674.3
17.5°	920.6	898.7	877.0	849.9	823.9	790.9	763.5	737.1	705.7	674.0	652.6
20°	924.4	899.3	872.6	843.3	816.0	782.1	751.3	720.5	684.0	649.8	623.1
22.5°	921.6	897.1	867.2	834.2	804.7	769.8	736.5	702.6	661.7	625.9	595.7
25°	913.4	890.8	860.0	823.9	788.4	752.9	718.0	681.8	637.5	596.1	562.8
27.5°	896.8	876.7	847.1	808.8	771.4	732.1	695.7	658.0	610.5	568.1	532.6
30°	874.5	858.4	828.6	790.2	749.7	707.6	670.2	631.9	582.6	536.4	498.7
32.5°	843.7	832.4	806.6	769.2	725.5	680.9	642.6	603.6	550.8	506.8	468.5
35°	809.1	803.8	780.8	743.4	698.2	651.4	610.2	570.3	521.6	475.1	438.3
37.5°	768.6	772.3	751.6	714.5	667.7	619.9	576.6	537.9	488.6	444.0	407.8
40°	728.3	734.0	718.3	683.7	635.0	585.7	541.7	500.2	454.4	415.1	379.3
42.5°	683.7	695.0	682.8	649.2	601.7	549.6	503.7	465.0	421.4	385.2	353.8
45°	636.3	650.7	645.7	611.5	564.6	513.4	465.0	424.8	389.6	357.6	329.0
47.5°	588.2	604.9	602.7	574.1	529.1	476.7	428.9	389.3	356.9	331.2	307.3
50°	538.9	555.8	556.2	530.7	488.9	439.0	387.7	351.9	326.2	303.5	284.0
52.5°	490.8	507.8	508.1	488.3	446.5	397.8	350.7	318.0	296.0	278.4	262.1
55°	440.5	460.3	462.2	443.0	406.0	359.1	315.8	284.7	265.2	253.9	239.7
57.5°	389.6	411.0	414.8	399.4	363.5	319.9	283.4	253.6	237.9	230.0	219.3
60°	342.2	363.2	369.2	351.6	322.1	284.7	249.8	224.7	212.1	205.8	198.3
62.5°	298.5	319.6	322.7	307.6	278.4	247.0	220.6	197.6	187.3	182.6	176.6
65°	255.8	274.6	278.7	265.2	238.8	212.7	189.5	172.8	163.7	159.6	155.9
67.5°	216.5	234.1	236.9	224.7	202.7	180.4	163.4	148.9	142.7	137.3	135.7
70°	179.4	195.4	198.0	185.7	168.4	150.2	136.1	126.0	120.0	116.9	114.7
72.5°	145.2	157.7	159.9	152.4	138.9	122.9	111.9	103.4	99.6	96.8	95.8
75°	113.4	125.7	126.0	119.4	108.4	97.4	88.9	84.5	80.1	77.3	76.7
77.5°	87.0	93.9	94.9	91.4	80.8	73.8	67.2	64.1	62.5	59.7	59.7
80°	62.2	66.3	67.9	62.8	57.8	51.8	48.4	45.9	44.6	42.7	42.7
82.5°	38.6	42.1	44.0	40.2	37.7	34.6	32.0	30.5	29.5	28.6	28.3
85°	21.1	23.6	23.6	22.3	20.1	18.5	17.6	17.0	16.7	16.3	16.0
87.5°	7.5	9.4	8.5	8.8	7.9	7.5	7.2	7.2	7.5	6.9	6.9
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5	780.5
2.5°	766.7	765.1	760.4	756.0	752.5	745.0	743.4	744.1	744.1	744.4	740.9
5°	748.1	741.5	734.0	727.1	721.7	713.3	708.6	707.3	706.4	704.5	701.0
7.5°	727.1	719.5	708.9	702.6	691.3	681.8	675.2	670.8	668.0	663.9	658.3
10°	705.7	694.7	682.8	670.2	658.9	646.3	636.0	630.9	625.0	620.9	614.6
12.5°	684.4	669.0	652.6	638.2	622.8	608.0	597.3	590.4	579.7	573.8	567.2
15°	656.4	637.5	623.7	598.6	591.0	569.7	556.8	551.4	541.1	539.2	528.8
17.5°	630.0	608.3	587.9	566.8	546.7	532.0	521.0	514.1	505.9	500.9	493.9
20°	597.0	574.4	549.9	527.9	510.9	495.2	488.3	479.5	474.8	469.7	464.7
22.5°	565.6	537.9	513.4	495.5	478.2	465.4	457.8	451.8	447.8	442.7	439.3
25°	532.0	506.2	483.6	465.0	448.4	438.3	432.0	428.6	426.1	422.3	420.1
27.5°	499.9	473.8	451.5	437.4	423.9	415.1	411.9	408.8	405.7	404.4	404.1
30°	465.7	441.8	423.6	411.3	399.1	394.3	392.8	389.6	390.3	390.6	389.6
32.5°	436.8	413.5	399.7	389.3	379.9	376.4	376.1	374.9	375.2	376.7	376.1
35°	406.9	389.6	375.8	367.3	361.3	358.8	359.1	359.5	361.3	361.7	362.9
37.5°	381.5	364.8	355.7	347.5	344.7	344.7	345.0	345.3	346.9	348.8	349.4
40°	356.3	342.8	335.0	329.6	328.0	328.0	329.3	330.9	331.8	333.7	334.0
42.5°	333.7	322.4	316.4	311.1	311.7	313.3	313.6	314.5	317.0	317.4	318.0
45°	311.4	302.9	296.9	295.4	295.4	296.6	298.2	298.8	300.7	301.0	301.6
47.5°	292.2	283.4	279.0	277.5	278.4	280.0	282.2	283.1	284.7	284.4	285.9
50°	270.9	263.6	260.2	259.5	260.2	263.0	263.9	266.1	267.7	268.7	269.3
52.5°	250.4	244.8	243.2	242.9	244.1	246.0	247.3	249.5	251.4	251.4	251.1
55°	230.9	225.9	224.0	225.6	227.2	228.1	230.6	231.9	233.8	234.1	233.8
57.5°	211.2	206.8	206.1	206.8	209.9	211.8	213.4	213.4	214.3	214.6	215.6
60°	190.7	187.9	187.3	188.8	192.3	193.6	194.5	194.8	196.1	195.4	197.3
62.5°	171.6	168.7	170.0	171.6	172.8	174.7	175.3	176.9	176.6	177.2	178.2
65°	151.8	150.2	150.5	152.4	154.0	156.5	156.5	156.5	158.0	158.0	158.7
67.5°	132.6	131.7	132.9	134.5	134.8	136.4	136.1	137.9	139.2	139.8	140.5
70°	114.1	113.4	113.4	115.0	116.6	117.2	117.8	119.1	119.4	120.3	121.9
72.5°	96.5	94.6	94.9	97.1	97.1	98.3	99.9	99.9	101.8	102.1	103.7
75°	77.3	76.7	77.3	78.6	80.1	79.8	81.7	81.4	82.0	84.2	84.5
77.5°	60.3	59.4	61.0	61.6	61.9	62.2	62.8	64.4	65.7	66.6	66.9
80°	43.4	43.0	44.6	45.2	44.9	45.6	46.5	48.1	48.1	48.7	49.6
82.5°	29.2	28.6	29.5	30.5	31.1	31.4	31.4	32.0	32.4	33.0	33.0
85°	16.7	16.7	17.3	17.6	18.2	17.9	18.5	18.2	18.9	19.5	19.2
87.5°	7.2	7.2	7.2	7.2	7.5	7.5	7.9	7.9	7.5	7.9	7.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CATALOG NUMBER: S121DR-H490D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	780.5	780.5	780.5	780.5
2.5°	739.7	740.3	738.7	737.1
5°	700.7	698.5	696.3	695.7
7.5°	657.0	657.0	651.7	652.9
10°	610.2	608.3	604.2	604.5
12.5°	564.6	563.1	560.9	559.9
15°	523.5	524.4	526.0	517.2
17.5°	491.1	488.6	487.3	485.8
20°	462.2	461.0	458.4	458.1
22.5°	439.9	437.1	436.4	436.8
25°	418.5	418.5	418.5	416.6
27.5°	403.5	403.5	402.5	402.8
30°	390.3	390.9	389.9	390.3
32.5°	377.7	378.0	377.4	377.1
35°	363.5	364.5	364.2	364.5
37.5°	350.0	350.7	350.0	350.0
40°	334.6	336.2	335.9	335.0
42.5°	319.2	319.2	320.2	319.9
45°	303.2	302.6	302.6	303.5
47.5°	286.2	287.5	286.9	287.2
50°	270.5	270.2	269.3	269.0
52.5°	252.0	252.6	252.3	250.7
55°	234.1	234.1	233.8	233.8
57.5°	214.9	215.9	215.6	215.6
60°	196.7	197.3	197.6	197.3
62.5°	178.2	178.5	178.2	178.5
65°	160.2	160.2	159.9	160.9
67.5°	140.8	141.1	140.8	141.4
70°	122.2	122.9	123.2	122.5
72.5°	104.6	104.0	104.3	103.7
75°	85.2	85.5	85.2	85.5
77.5°	66.9	67.2	66.9	67.2
80°	49.3	49.3	49.6	49.0
82.5°	33.3	33.3	34.2	33.3
85°	19.5	19.5	18.9	20.1
87.5°	7.5	7.5	7.5	7.5
90°	0.0	0.0	0.0	0.0

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