

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: P231616

Luminaire Tested: **S123-DR-LO-30-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231616  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33913)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123-DR-LO-30-X-0048-1-U-DD-4-W  
Description: DEFINE 3 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1257.3 lumens  
Efficiency: N/A  
Efficacy: 92.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.25 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.22' x L: 3.92' x H: 0.08')  
CIE Type: Direct

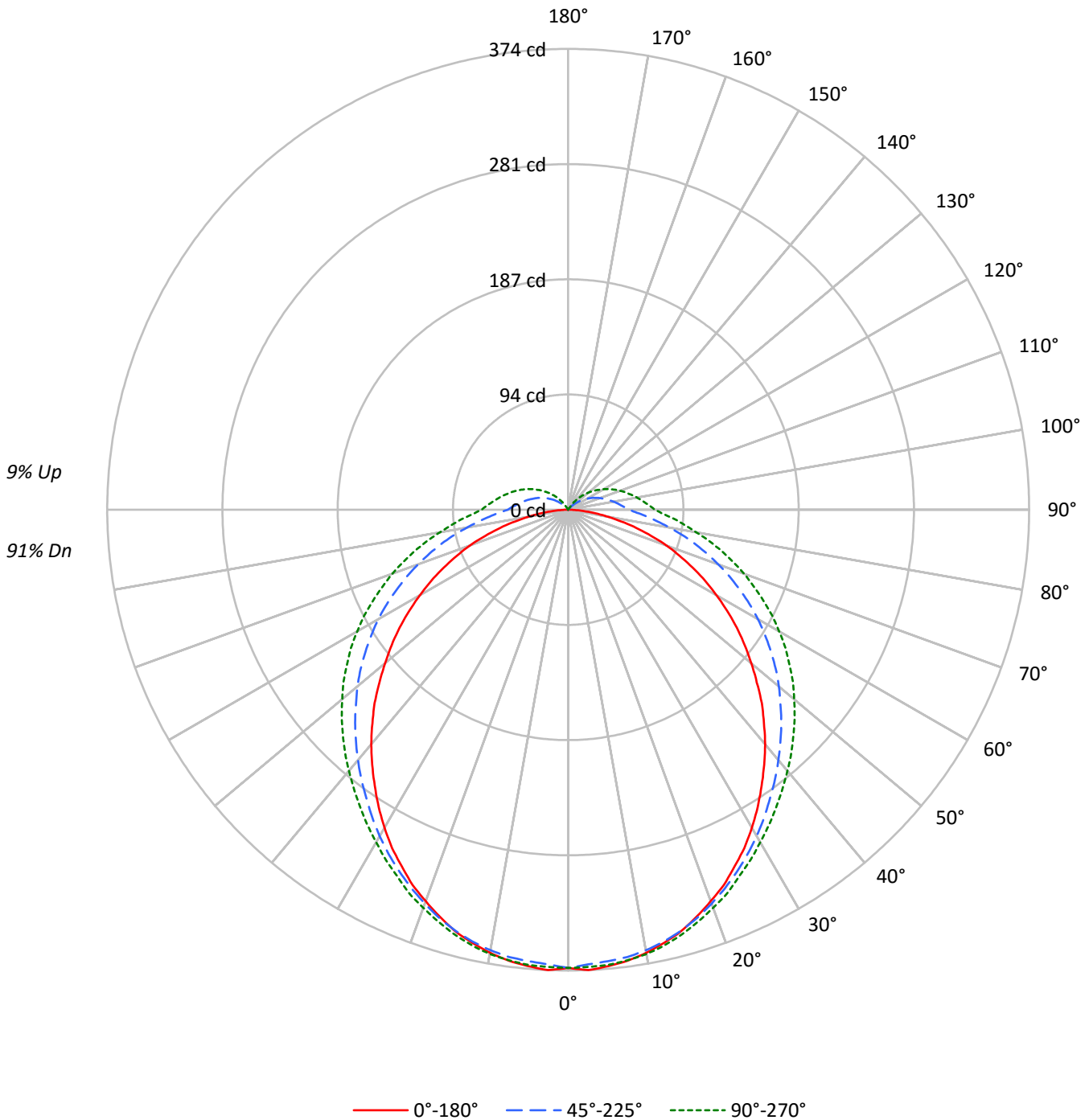
Input Watts (W): 13.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P231616

CATALOG NUMBER: S123-DR-LO-30-X-0048-1-U-DD-4-W

### 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	0
RCR																		
0	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	91
1	105	100	95	90	101	96	92	88	90	87	84	85	82	79	80	78	76	73
2	95	86	79	72	91	83	76	71	78	73	68	74	69	65	69	66	62	59
3	86	75	66	59	83	73	65	58	68	62	56	64	59	54	61	56	52	49
4	79	66	57	50	76	64	56	49	61	53	48	57	51	46	54	49	44	42
5	72	59	50	43	70	57	49	42	54	47	41	51	45	40	49	43	38	36
6	67	53	44	37	64	52	43	37	49	41	36	46	40	35	44	38	34	31
7	62	48	39	33	59	47	38	32	44	37	31	42	36	31	40	34	30	28
8	57	44	35	29	55	43	34	29	41	33	28	39	32	27	37	31	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22
10	50	37	29	24	49	36	28	23	35	28	23	33	27	22	32	26	22	20

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

	0°	45°	90°
0°	4577	4577	4577
5°	4586	4436	4437
10°	4547	4325	4294
15°	4487	4193	4133
20°	4394	4045	3965
25°	4295	3895	3796
30°	4185	3744	3643
35°	4050	3590	3507
40°	3924	3454	3386
45°	3785	3328	3277
50°	3623	3208	3172
55°	3478	3082	3066
60°	3297	2953	2956
65°	3100	2797	2828
70°	2883	2639	2699
75°	2520	2472	2554
80°	2043	2284	2402
85°	1420	2158	2318



TEST NUMBER: P231616

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	35.2	2.8
10°-20°	100.2	8.0
20°-30°	149.7	11.9
30°-40°	178.9	14.2
40°-50°	187.5	14.9
50°-60°	176.9	14.1
60°-70°	148.1	11.8
70°-80°	106.5	8.5
80°-90°	64.3	5.1
90°-100°	41.4	3.3
100°-110°	30.4	2.4
110°-120°	20.4	1.6
120°-130°	11.7	0.9
130°-140°	5.1	0.4
140°-150°	0.9	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	285.1	22.7
0°-40°	464.0	36.9
0°-60°	828.4	65.9
0°-90°	1147.3	91.2
90°-120°	92.3	7.3
90°-150°	110.0	8.8
90°-180°	110.0	8.7
0°-180°	1257.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	372	372	372	372	372	
5°	372	371	368	371	371	35
15°	354	354	354	358	357	100
25°	319	322	324	329	328	147
35°	274	280	286	293	294	171
45°	222	232	244	255	258	171
55°	167	182	201	215	219	149
65°	111	131	154	170	175	110
75°	57	80	106	122	128	61
85°	12	37	64	80	86	15
90°	0	23	49	65	70	1
95°	0	19	43	58	63	0
105°	0	11	32	46	50	0
115°	0	5	23	35	39	0
125°	0	0	14	24	28	0
135°	0	0	5	13	16	0
145°	0	0	0	3	5	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P231616

CATALOG NUMBER: S123-DR-LO-30-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	371.9	371.9	371.9	371.9	371.9	371.9	371.9	371.9	371.9	371.9	371.9
2.5°	374.0	373.0	371.9	371.9	372.5	372.5	372.5	371.4	370.9	369.3	369.3
5°	371.9	370.9	369.9	370.4	370.4	370.9	370.9	370.4	369.3	367.8	368.8
7.5°	369.3	368.3	367.3	367.3	367.8	368.3	368.3	367.8	367.3	366.2	366.7
10°	365.2	364.1	363.1	363.1	363.6	364.6	365.2	364.6	364.1	363.1	363.6
12.5°	360.0	358.9	357.9	358.9	359.4	360.5	360.5	360.5	360.0	358.9	360.0
15°	354.2	352.7	352.2	352.7	353.7	354.8	355.3	354.8	354.8	353.7	354.8
17.5°	346.4	345.4	344.9	345.9	347.0	348.0	349.0	348.5	348.5	347.5	348.5
20°	338.1	337.1	337.1	338.1	339.2	340.7	341.2	341.2	341.2	340.2	341.8
22.5°	329.8	328.2	328.2	329.3	331.4	332.4	332.9	332.9	332.9	332.4	334.5
25°	319.4	318.4	318.9	319.9	321.5	323.0	324.1	324.1	324.1	324.1	325.6
27.5°	309.5	307.9	308.5	310.0	312.1	313.2	314.7	314.7	314.7	315.2	316.8
30°	298.1	297.0	298.1	299.6	301.7	303.3	304.3	305.3	305.3	305.9	307.9
32.5°	286.1	285.6	286.6	288.7	289.7	292.3	293.4	293.9	294.9	296.0	297.5
35°	273.6	273.1	274.7	276.7	278.8	280.9	282.5	283.0	284.5	285.6	288.2
37.5°	261.1	261.1	262.7	264.3	266.9	269.5	271.0	272.1	273.1	275.7	278.3
40°	248.6	248.1	249.7	251.8	254.4	257.5	259.1	260.6	262.2	265.3	267.9
42.5°	235.1	235.1	237.2	239.8	242.9	246.0	247.6	248.6	251.8	254.9	257.5
45°	222.1	222.1	224.2	227.3	230.4	233.6	236.2	238.2	241.4	244.5	247.1
47.5°	207.6	208.6	210.7	213.8	217.4	221.1	223.7	226.8	230.4	233.6	236.7
50°	194.0	194.5	198.2	201.3	205.0	209.1	212.2	215.4	219.5	223.2	226.8
52.5°	180.5	181.5	184.7	188.3	192.5	196.1	200.8	204.4	208.1	212.2	215.9
55°	167.0	167.5	171.7	175.8	179.5	184.1	188.3	193.0	197.2	200.8	204.4
57.5°	152.9	154.5	157.6	161.8	166.5	171.7	176.3	180.5	184.7	189.3	193.5
60°	138.9	141.0	144.6	148.8	153.5	159.2	164.4	169.1	173.2	177.9	182.1
62.5°	125.4	126.9	131.1	135.2	140.4	146.2	151.9	156.6	161.3	165.9	170.6
65°	111.3	114.4	117.6	122.2	128.0	133.7	139.4	144.6	149.3	153.5	158.1
67.5°	97.8	99.9	104.6	109.2	115.0	121.2	126.4	132.1	137.3	141.5	145.7
70°	84.8	86.9	91.0	96.2	102.5	108.7	114.4	119.1	124.8	129.5	134.2
72.5°	70.7	73.3	78.0	83.2	89.5	95.7	102.0	107.7	112.9	117.6	122.2
75°	57.2	60.3	65.0	70.7	77.5	83.2	89.5	95.2	100.9	106.1	110.3
77.5°	44.2	47.3	52.5	58.8	65.0	71.8	77.5	83.7	89.0	94.7	99.4
80°	32.3	35.9	41.1	47.3	53.6	60.3	66.6	72.3	78.0	83.2	88.4
82.5°	22.4	25.5	30.7	36.9	43.7	49.9	56.2	62.4	67.6	73.3	78.0
85°	12.5	16.1	21.8	27.6	34.3	40.6	46.8	53.1	58.3	64.0	68.7
87.5°	5.2	9.4	14.6	20.3	26.5	32.8	39.0	44.7	50.5	55.7	60.3
90°	0.0	3.6	8.3	14.0	20.3	26.5	32.3	38.0	43.7	48.9	53.1
92.5°	0.0	2.1	6.2	12.0	17.7	23.9	30.2	35.4	40.6	45.8	49.9
95°	0.0	1.0	5.2	10.4	16.1	21.8	27.6	32.8	38.0	42.7	46.8
97.5°	0.0	0.5	4.2	8.8	14.0	19.8	25.5	30.7	35.4	40.1	44.2
100°	0.0	0.0	3.1	7.3	12.5	17.7	22.9	28.1	32.8	37.5	41.6
102.5°	0.0	0.0	1.6	5.7	10.9	15.6	20.8	26.0	30.7	34.9	39.0
105°	0.0	0.0	1.0	4.7	8.8	14.0	18.7	23.4	28.1	32.3	36.4
107.5°	0.0	0.0	0.0	3.1	7.8	12.0	16.6	21.3	26.0	29.7	33.8
110°	0.0	0.0	0.0	2.1	6.2	10.4	15.1	19.2	23.4	27.6	31.2



TEST NUMBER: P231616

CATALOG NUMBER: S123-DR-LO-30-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	1.0	4.7	8.8	13.0	17.2	21.3	25.0	28.6
115°	0.0	0.0	0.0	0.0	3.1	7.3	10.9	15.1	19.2	22.9	26.0
117.5°	0.0	0.0	0.0	0.0	2.1	5.7	9.4	13.0	16.6	20.3	23.4
120°	0.0	0.0	0.0	0.0	0.5	4.2	7.3	10.9	14.6	17.7	21.3
122.5°	0.0	0.0	0.0	0.0	0.0	2.6	5.7	9.4	12.5	15.6	18.7
125°	0.0	0.0	0.0	0.0	0.0	1.0	4.2	7.3	10.4	13.5	16.1
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.2	8.3	10.9	14.0
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.6	6.2	8.8	11.4
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	4.7	6.8	9.4
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.6	5.2	7.3
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.1	5.2
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.1
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
145°	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P231616

CATALOG NUMBER: S123-DR-LO-30-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	371.9	371.9	371.9	371.9	371.9	371.9	371.9	371.9
2.5°	370.9	371.4	371.9	371.9	371.9	371.9	371.4	371.4
5°	369.9	370.9	370.9	371.4	371.4	371.4	370.9	370.9
7.5°	368.3	368.8	369.3	369.3	369.9	369.9	369.3	368.8
10°	365.2	366.2	366.7	366.7	366.7	366.7	366.7	366.2
12.5°	361.5	362.0	362.6	362.6	362.6	363.1	362.6	362.0
15°	356.3	357.4	357.4	357.9	357.9	357.9	357.4	356.8
17.5°	350.1	351.1	351.6	351.6	351.6	351.6	351.1	350.6
20°	343.3	343.8	344.9	344.4	344.9	344.9	344.4	343.8
22.5°	335.5	336.0	337.1	336.6	337.6	337.6	337.1	337.1
25°	327.2	328.2	328.8	328.8	328.8	328.8	328.8	328.2
27.5°	318.4	318.9	319.9	320.4	320.4	320.4	320.4	320.4
30°	309.0	310.0	311.1	311.1	312.1	312.6	312.1	311.6
32.5°	299.1	300.7	301.7	302.2	303.3	303.8	303.3	303.3
35°	289.2	291.3	292.9	293.4	294.4	294.4	294.9	294.4
37.5°	279.9	281.9	283.0	284.5	285.6	286.6	286.1	285.6
40°	270.5	272.6	274.1	275.2	276.2	276.7	276.7	276.7
42.5°	260.1	262.7	264.3	265.8	267.4	267.9	267.9	267.9
45°	249.7	252.3	254.4	256.5	258.0	258.5	258.5	258.5
47.5°	239.8	242.4	244.5	246.6	248.1	248.6	249.2	249.2
50°	229.9	232.5	235.1	236.7	238.2	239.3	239.3	239.3
52.5°	219.0	221.6	224.2	226.3	228.4	228.9	229.9	229.9
55°	208.1	211.2	214.3	216.4	217.4	218.5	219.0	219.0
57.5°	197.2	199.8	202.4	205.5	207.0	208.1	208.6	209.1
60°	185.7	188.8	191.9	194.5	195.6	197.2	197.7	197.7
62.5°	173.7	176.9	180.5	182.6	184.7	185.7	186.2	186.7
65°	162.3	165.4	168.5	171.7	172.7	173.7	174.8	174.8
67.5°	150.3	153.5	156.6	159.2	160.7	162.3	163.3	162.8
70°	138.4	142.0	144.6	147.7	149.3	150.3	151.4	151.9
72.5°	126.4	130.0	133.2	135.8	137.3	138.4	139.4	139.9
75°	115.0	118.1	121.2	123.3	125.4	126.9	127.4	128.5
77.5°	103.0	107.2	109.8	112.9	113.9	115.5	116.0	117.0
80°	92.6	95.7	98.8	101.4	103.5	105.1	105.1	105.6
82.5°	82.2	85.3	88.4	91.6	93.1	94.7	95.2	95.2
85°	72.3	75.9	79.1	81.7	83.7	84.8	85.8	86.4
87.5°	64.5	67.6	70.7	72.8	74.9	75.9	77.0	77.0
90°	57.2	60.3	63.5	66.1	67.6	68.7	69.7	70.2
92.5°	54.1	57.2	60.3	62.4	64.5	65.5	66.1	66.6
95°	51.0	54.1	57.2	59.3	60.9	62.4	62.9	62.9
97.5°	47.9	51.0	54.1	56.2	57.7	58.8	59.8	59.8
100°	45.3	48.4	51.0	53.1	54.6	55.7	56.7	56.7
102.5°	42.1	45.3	47.9	49.9	51.5	52.5	53.6	53.6
105°	39.5	42.7	45.3	47.3	48.9	49.9	50.5	50.5
107.5°	36.9	40.1	42.7	44.2	45.8	46.8	47.9	47.9
110°	34.3	36.9	39.5	41.6	43.2	44.2	44.7	44.7





TEST NUMBER: P231616

CATALOG NUMBER: S123-DR-LO-30-X-0048-1-U-DD-4-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	31.7	34.3	36.9	38.5	40.1	41.1	41.6	42.1
115°	29.1	31.7	33.8	35.9	37.5	38.0	39.0	39.0
117.5°	26.5	29.1	31.2	32.8	34.3	35.4	35.9	36.4
120°	23.9	26.0	28.6	30.2	31.7	32.3	33.3	33.3
122.5°	21.3	23.4	26.0	27.0	28.6	29.7	30.2	30.2
125°	18.7	21.3	22.9	24.4	26.0	26.5	27.0	27.6
127.5°	16.1	18.2	20.3	21.8	22.9	23.9	24.4	24.4
130°	13.5	15.6	17.7	19.2	20.3	20.8	21.3	21.8
132.5°	11.4	13.5	15.1	16.1	17.7	18.2	18.7	18.7
135°	8.8	10.9	12.5	13.5	14.6	15.6	15.6	16.1
137.5°	6.8	8.3	9.9	10.9	12.0	12.5	13.0	13.0
140°	4.7	6.2	7.3	8.3	9.4	9.9	10.4	10.4
142.5°	2.6	3.6	5.2	5.7	6.8	7.3	7.8	7.8
145°	0.5	1.6	2.6	3.6	4.2	4.7	5.2	5.2
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)