

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: P231620

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

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P231620  
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-1-30-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**

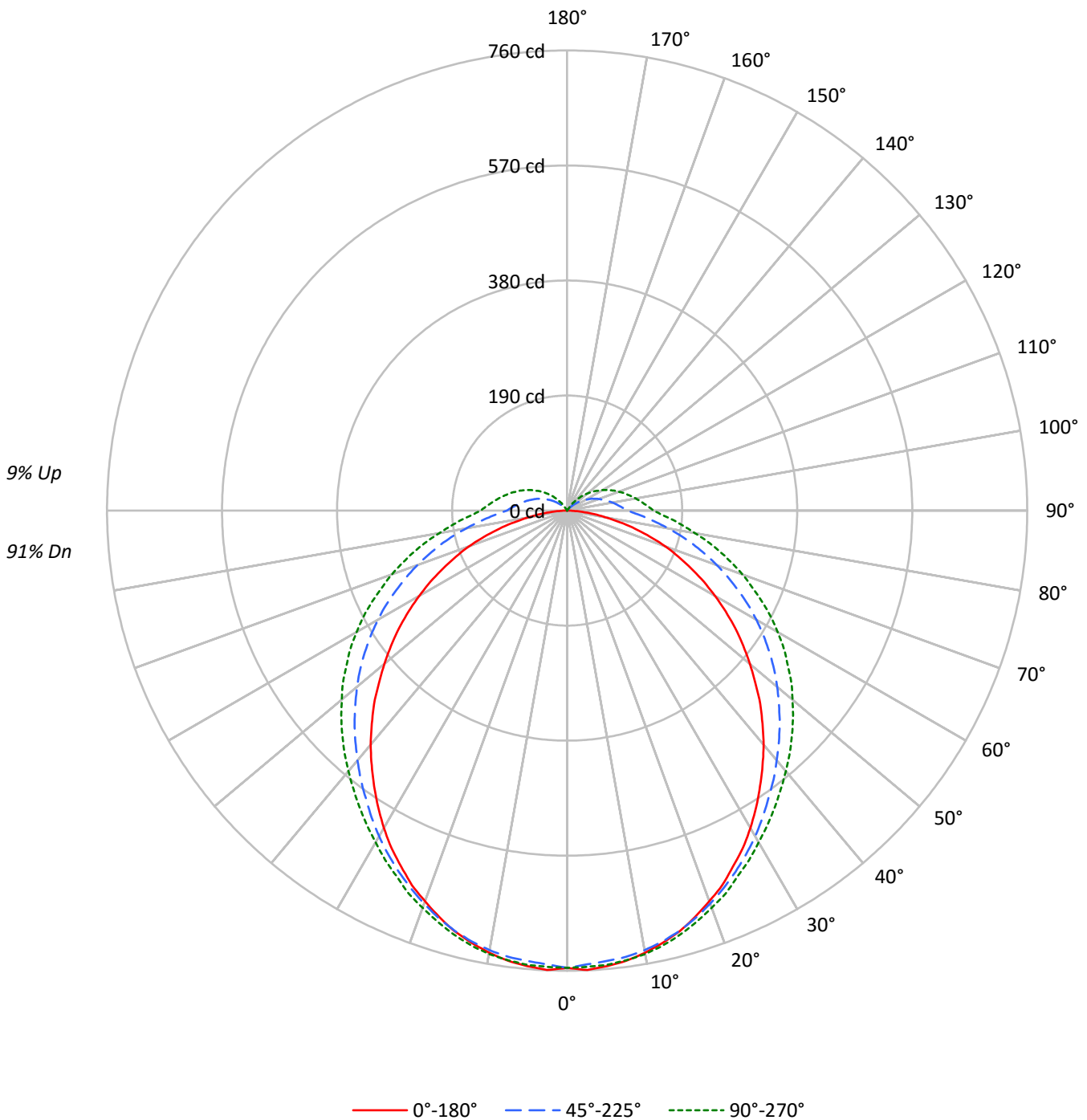
Lumens per Lamp: N/A  
Luminaire Lumens: 2553.0 lumens  
Efficiency: N/A  
Efficacy: 91.5 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.25 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.22' x L: 3.92' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 27.9  
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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CATALOG NUMBER: S123-DR-1-30-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°	9294	9294	9294
5°	9313	9006	9010
10°	9232	8782	8719
15°	9113	8516	8393
20°	8923	8214	8051
25°	8721	7908	7710
30°	8496	7603	7398
35°	8225	7290	7123
40°	7969	7014	6875
45°	7686	6758	6655
50°	7357	6512	6440
55°	7062	6257	6225
60°	6695	5995	6002
65°	6294	5679	5742
70°	5854	5359	5480
75°	5119	5022	5186
80°	4143	4640	4877
85°	2885	4381	4703



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	71.5	2.8
10°-20°	203.4	8.0
20°-30°	304.0	11.9
30°-40°	363.3	14.2
40°-50°	380.8	14.9
50°-60°	359.2	14.1
60°-70°	300.8	11.8
70°-80°	216.2	8.5
80°-90°	130.5	5.1
90°-100°	84.2	3.3
100°-110°	61.8	2.4
110°-120°	41.5	1.6
120°-130°	23.8	0.9
130°-140°	10.3	0.4
140°-150°	1.9	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	578.9	22.7
0°-40°	942.2	36.9
0°-60°	1682.1	65.9
0°-90°	2329.6	91.2
90°-120°	187.5	7.3
90°-150°	223.5	8.8
90°-180°	223.0	8.7
0°-180°	2553.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	755	755	755	755	755	
5°	755	753	747	754	753	72
15°	719	719	718	726	725	202
25°	649	654	658	668	666	299
35°	556	568	580	595	598	348
45°	451	471	496	519	525	347
55°	339	369	408	437	445	303
65°	226	266	312	345	355	224
75°	116	163	216	248	261	124
85°	25	76	130	163	175	30
90°	0	48	99	132	143	1
95°	0	39	87	118	128	0
105°	0	23	66	94	102	0
115°	0	11	46	71	79	0
125°	0	1	28	48	56	0
135°	0	0	11	26	33	0
145°	1	0	0	6	11	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: P231620

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	755.2	755.2	755.2	755.2	755.2	755.2	755.2	755.2	755.2	755.2	755.2
2.5°	759.5	757.4	755.2	755.2	756.3	756.3	756.3	754.2	753.1	750.0	750.0
5°	755.2	753.1	751.0	752.1	752.1	753.1	753.1	752.1	750.0	746.8	748.9
7.5°	750.0	747.8	745.7	745.7	746.8	747.8	747.8	746.8	745.7	743.6	744.7
10°	741.5	739.4	737.3	737.3	738.3	740.5	741.5	740.5	739.4	737.3	738.3
12.5°	730.9	728.8	726.7	728.8	729.9	732.0	732.0	732.0	730.9	728.8	730.9
15°	719.3	716.2	715.1	716.2	718.3	720.4	721.4	720.4	720.4	718.3	720.4
17.5°	703.5	701.4	700.3	702.4	704.5	706.7	708.8	707.7	707.7	705.6	707.7
20°	686.6	684.5	684.5	686.6	688.7	691.9	692.9	692.9	692.9	690.8	694.0
22.5°	669.7	666.5	666.5	668.6	672.9	675.0	676.0	676.0	676.0	675.0	679.2
25°	648.6	646.4	647.5	649.6	652.8	655.9	658.1	658.1	658.1	658.1	661.2
27.5°	628.5	625.3	626.4	629.5	633.8	635.9	639.0	639.0	639.0	640.1	643.3
30°	605.2	603.1	605.2	608.4	612.6	615.8	617.9	620.0	620.0	621.1	625.3
32.5°	581.0	579.9	582.0	586.2	588.3	593.6	595.7	596.8	598.9	601.0	604.2
35°	555.6	554.5	557.7	561.9	566.2	570.4	573.6	574.6	577.8	579.9	585.2
37.5°	530.3	530.3	533.4	536.6	541.9	547.2	550.3	552.4	554.5	559.8	565.1
40°	504.9	503.8	507.0	511.2	516.5	522.9	526.0	529.2	532.4	538.7	544.0
42.5°	477.4	477.4	481.7	486.9	493.3	499.6	502.8	504.9	511.2	517.6	522.9
45°	451.0	451.0	455.3	461.6	467.9	474.3	479.6	483.8	490.1	496.5	501.7
47.5°	421.5	423.6	427.8	434.1	441.5	448.9	454.2	460.5	467.9	474.3	480.6
50°	394.0	395.0	402.4	408.8	416.2	424.6	431.0	437.3	445.8	453.1	460.5
52.5°	366.5	368.6	375.0	382.4	390.8	398.2	407.7	415.1	422.5	431.0	438.4
55°	339.1	340.1	348.6	357.0	364.4	373.9	382.4	391.9	400.3	407.7	415.1
57.5°	310.5	313.7	320.1	328.5	338.0	348.6	358.1	366.5	375.0	384.5	392.9
60°	282.0	286.3	293.6	302.1	311.6	323.2	333.8	343.3	351.7	361.2	369.7
62.5°	254.6	257.7	266.2	274.6	285.2	296.8	308.4	317.9	327.4	337.0	346.5
65°	226.0	232.4	238.7	248.2	259.8	271.5	283.1	293.6	303.2	311.6	321.1
67.5°	198.6	202.8	212.3	221.8	233.4	246.1	256.7	268.3	278.9	287.3	295.8
70°	172.2	176.4	184.8	195.4	208.1	220.8	232.4	241.9	253.5	263.0	272.5
72.5°	143.7	148.9	158.4	169.0	181.7	194.4	207.0	218.6	229.2	238.7	248.2
75°	116.2	122.5	132.0	143.7	157.4	169.0	181.7	193.3	204.9	215.5	223.9
77.5°	89.8	96.1	106.7	119.4	132.0	145.8	157.4	170.1	180.6	192.2	201.7
80°	65.5	72.9	83.4	96.1	108.8	122.5	135.2	146.8	158.4	169.0	179.6
82.5°	45.4	51.8	62.3	75.0	88.7	101.4	114.1	126.8	137.3	148.9	158.4
85°	25.4	32.7	44.4	56.0	69.7	82.4	95.1	107.7	118.3	129.9	139.4
87.5°	10.6	19.0	29.6	41.2	53.9	66.5	79.2	90.8	102.5	113.0	122.5
90°	0.0	7.4	16.9	28.5	41.2	53.9	65.5	77.1	88.7	99.3	107.7
92.5°	0.0	4.2	12.7	24.3	35.9	48.6	61.3	71.8	82.4	93.0	101.4
95°	0.0	2.1	10.6	21.1	32.7	44.4	56.0	66.5	77.1	86.6	95.1
97.5°	0.0	1.1	8.5	18.0	28.5	40.1	51.8	62.3	71.8	81.3	89.8
100°	0.0	0.0	6.3	14.8	25.4	35.9	46.5	57.0	66.5	76.1	84.5
102.5°	0.0	0.0	3.2	11.6	22.2	31.7	42.3	52.8	62.3	70.8	79.2
105°	0.0	0.0	2.1	9.5	18.0	28.5	38.0	47.5	57.0	65.5	73.9
107.5°	0.0	0.0	0.0	6.3	15.8	24.3	33.8	43.3	52.8	60.2	68.7
110°	0.0	0.0	0.0	4.2	12.7	21.1	30.6	39.1	47.5	56.0	63.4



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**CANDELA DISTRIBUTION (continued):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	2.1	9.5	18.0	26.4	34.9	43.3	50.7	58.1
115°	0.0	0.0	0.0	0.0	6.3	14.8	22.2	30.6	39.1	46.5	52.8
117.5°	0.0	0.0	0.0	0.0	4.2	11.6	19.0	26.4	33.8	41.2	47.5
120°	0.0	0.0	0.0	0.0	1.1	8.5	14.8	22.2	29.6	35.9	43.3
122.5°	0.0	0.0	0.0	0.0	0.0	5.3	11.6	19.0	25.4	31.7	38.0
125°	0.0	0.0	0.0	0.0	0.0	2.1	8.5	14.8	21.1	27.5	32.7
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	5.3	10.6	16.9	22.2	28.5
130°	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.4	12.7	18.0	23.2
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	9.5	13.7	19.0
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.3	10.6	14.8
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	6.3	10.6
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	6.3
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
145°	1.1	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



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
0°	755.2	755.2	755.2	755.2	755.2	755.2	755.2	755.2
2.5°	753.1	754.2	755.2	755.2	755.2	755.2	754.2	754.2
5°	751.0	753.1	753.1	754.2	754.2	754.2	753.1	753.1
7.5°	747.8	748.9	750.0	750.0	751.0	751.0	750.0	748.9
10°	741.5	743.6	744.7	744.7	744.7	744.7	744.7	743.6
12.5°	734.1	735.2	736.2	736.2	736.2	737.3	736.2	735.2
15°	723.6	725.7	725.7	726.7	726.7	726.7	725.7	724.6
17.5°	710.9	713.0	714.0	714.0	714.0	714.0	713.0	711.9
20°	697.1	698.2	700.3	699.3	700.3	700.3	699.3	698.2
22.5°	681.3	682.4	684.5	683.4	685.5	685.5	684.5	684.5
25°	664.4	666.5	667.6	667.6	667.6	667.6	667.6	666.5
27.5°	646.4	647.5	649.6	650.7	650.7	650.7	650.7	650.7
30°	627.4	629.5	631.7	631.7	633.8	634.8	633.8	632.7
32.5°	607.4	610.5	612.6	613.7	615.8	616.9	615.8	615.8
35°	587.3	591.5	594.7	595.7	597.9	597.9	598.9	597.9
37.5°	568.3	572.5	574.6	577.8	579.9	582.0	581.0	579.9
40°	549.3	553.5	556.7	558.8	560.9	561.9	561.9	561.9
42.5°	528.1	533.4	536.6	539.8	542.9	544.0	544.0	544.0
45°	507.0	512.3	516.5	520.7	523.9	525.0	525.0	525.0
47.5°	486.9	492.2	496.5	500.7	503.8	504.9	506.0	506.0
50°	466.9	472.2	477.4	480.6	483.8	485.9	485.9	485.9
52.5°	444.7	450.0	455.3	459.5	463.7	464.8	466.9	466.9
55°	422.5	428.8	435.2	439.4	441.5	443.6	444.7	444.7
57.5°	400.3	405.6	410.9	417.2	420.4	422.5	423.6	424.6
60°	377.1	383.4	389.8	395.0	397.2	400.3	401.4	401.4
62.5°	352.8	359.1	366.5	370.8	375.0	377.1	378.1	379.2
65°	329.6	335.9	342.2	348.6	350.7	352.8	354.9	354.9
67.5°	305.3	311.6	317.9	323.2	326.4	329.6	331.7	330.6
70°	281.0	288.4	293.6	300.0	303.2	305.3	307.4	308.4
72.5°	256.7	264.1	270.4	275.7	278.9	281.0	283.1	284.1
75°	233.4	239.8	246.1	250.3	254.6	257.7	258.8	260.9
77.5°	209.1	217.6	222.9	229.2	231.3	234.5	235.6	237.7
80°	188.0	194.4	200.7	206.0	210.2	213.4	213.4	214.4
82.5°	166.9	173.2	179.6	185.9	189.1	192.2	193.3	193.3
85°	146.8	154.2	160.6	165.8	170.1	172.2	174.3	175.3
87.5°	131.0	137.3	143.7	147.9	152.1	154.2	156.3	156.3
90°	116.2	122.5	128.9	134.1	137.3	139.4	141.5	142.6
92.5°	109.9	116.2	122.5	126.8	131.0	133.1	134.1	135.2
95°	103.5	109.9	116.2	120.4	123.6	126.8	127.8	127.8
97.5°	97.2	103.5	109.9	114.1	117.2	119.4	121.5	121.5
100°	91.9	98.2	103.5	107.7	110.9	113.0	115.1	115.1
102.5°	85.6	91.9	97.2	101.4	104.6	106.7	108.8	108.8
105°	80.3	86.6	91.9	96.1	99.3	101.4	102.5	102.5
107.5°	75.0	81.3	86.6	89.8	93.0	95.1	97.2	97.2
110°	69.7	75.0	80.3	84.5	87.7	89.8	90.8	90.8





TEST NUMBER: P231620

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

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	64.4	69.7	75.0	78.2	81.3	83.4	84.5	85.6
115°	59.2	64.4	68.7	72.9	76.1	77.1	79.2	79.2
117.5°	53.9	59.2	63.4	66.5	69.7	71.8	72.9	73.9
120°	48.6	52.8	58.1	61.3	64.4	65.5	67.6	67.6
122.5°	43.3	47.5	52.8	54.9	58.1	60.2	61.3	61.3
125°	38.0	43.3	46.5	49.6	52.8	53.9	54.9	56.0
127.5°	32.7	37.0	41.2	44.4	46.5	48.6	49.6	49.6
130°	27.5	31.7	35.9	39.1	41.2	42.3	43.3	44.4
132.5°	23.2	27.5	30.6	32.7	35.9	37.0	38.0	38.0
135°	18.0	22.2	25.4	27.5	29.6	31.7	31.7	32.7
137.5°	13.7	16.9	20.1	22.2	24.3	25.4	26.4	26.4
140°	9.5	12.7	14.8	16.9	19.0	20.1	21.1	21.1
142.5°	5.3	7.4	10.6	11.6	13.7	14.8	15.8	15.8
145°	1.1	3.2	5.3	7.4	8.5	9.5	10.6	10.6
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)