

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: P231601

Luminaire Tested: **S121-DR-2-35-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231601
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33907)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121-DR-2-35-X-0048-1-U-DD-4-W
Description: DEFINE 1 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

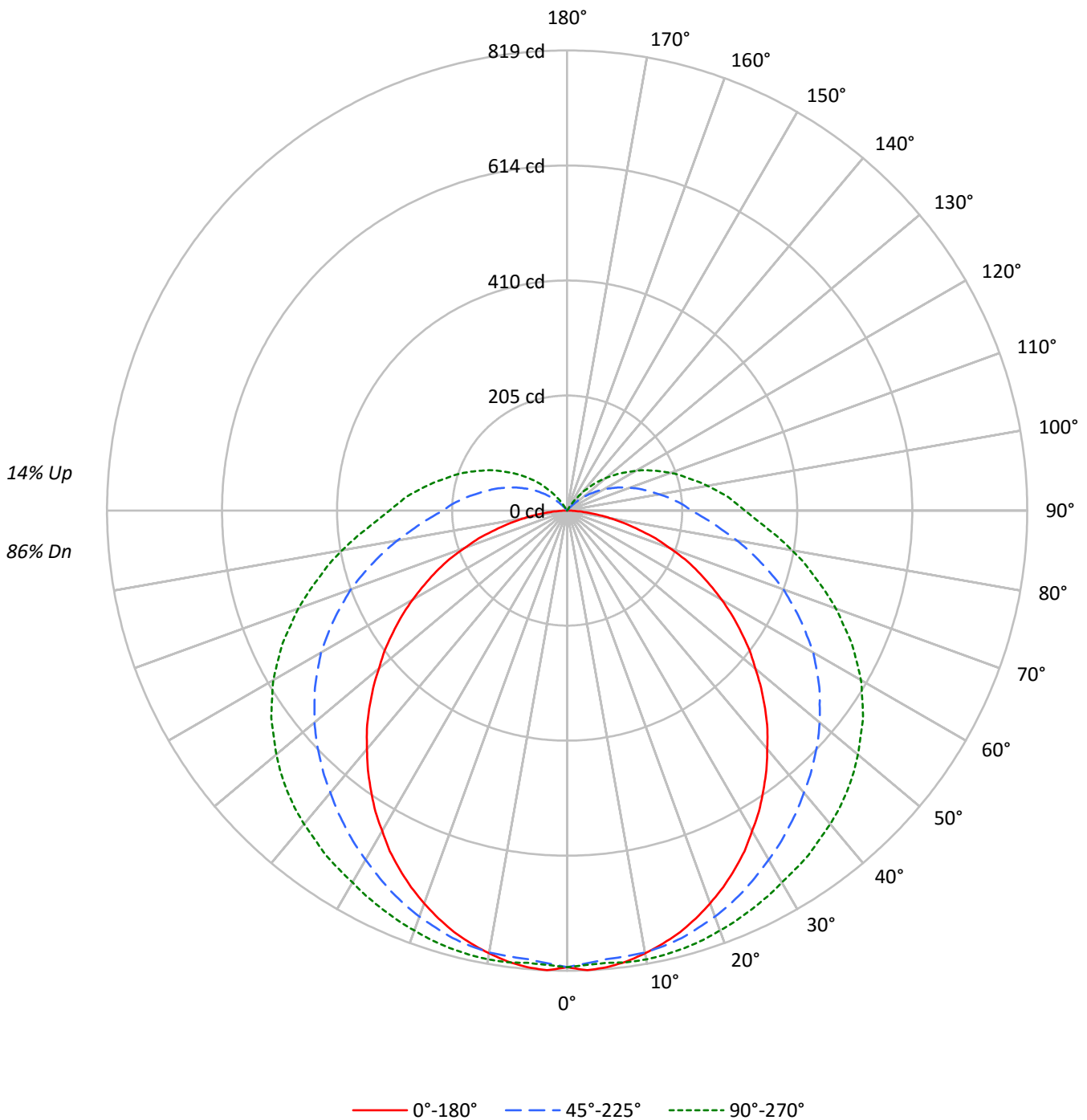
Lumens per Lamp: N/A
Luminaire Lumens: 3543.4 lumens
Efficiency: N/A
Efficacy: 83.2 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.42 / 1.49
Luminous Opening: Rectangular w/ Sides (W: 0.1' x L: 3.92' x H: 0.08')
CIE Type: Semi-Direct

Input Watts (W): 42.6
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



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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	0
RCR																		
0	116	116	116	116	112	112	112	112	104	104	104	96	96	96	90	90	90	86
1	103	97	91	86	98	93	88	84	86	82	79	80	77	74	74	72	69	66
2	92	83	75	68	88	79	72	66	74	68	62	68	63	59	63	59	56	53
3	83	72	62	55	80	69	61	54	64	57	51	59	53	49	55	50	46	43
4	76	63	53	46	72	61	52	45	56	49	43	52	46	41	48	43	39	36
5	69	56	46	39	66	54	45	38	50	42	36	47	40	35	43	38	33	31
6	64	50	40	34	61	48	39	33	45	37	32	42	35	30	39	33	29	26
7	59	45	36	29	57	44	35	29	41	33	28	38	31	27	36	30	25	23
8	55	41	32	26	53	40	31	26	37	30	25	35	28	24	33	27	23	20
9	51	37	29	23	49	36	28	23	34	27	22	32	26	21	30	24	20	18
10	48	34	26	21	46	33	26	21	31	25	20	30	23	19	28	22	18	16

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	22718	22718	22718
5°	22849	21352	21108
10°	22629	20453	20030
15°	22356	19574	19019
20°	21968	18699	18086
25°	21537	17879	17277
30°	20997	17101	16568
35°	20467	16419	16037
40°	19871	15782	15538
45°	19284	15249	15090
50°	18554	14735	14620
55°	17896	14226	14178
60°	17128	13706	13686
65°	16247	13064	13121
70°	14905	12452	12501
75°	13240	11696	11836
80°	11178	11013	11267
85°	7638	10398	10702



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	77.0	2.2
10°-20°	223.1	6.3
20°-30°	344.0	9.7
30°-40°	428.8	12.1
40°-50°	474.0	13.4
50°-60°	475.4	13.4
60°-70°	431.8	12.2
70°-80°	350.8	9.9
80°-90°	256.6	7.2
90°-100°	187.3	5.3
100°-110°	134.1	3.8
110°-120°	87.7	2.5
120°-130°	49.1	1.4
130°-140°	20.3	0.6
140°-150°	3.3	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	644.2	18.2
0°-40°	1073.0	30.3
0°-60°	2022.4	57.1
0°-90°	3061.6	86.4
90°-120°	409.2	11.5
90°-150°	481.8	13.6
90°-180°	482.0	13.6
0°-180°	3543.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	813	813	813	813	813	
5°	816	810	802	809	808	77
15°	777	777	788	806	806	219
25°	705	720	746	775	781	325
35°	609	640	688	733	749	381
45°	498	549	623	686	705	384
55°	378	448	548	619	643	339
65°	257	346	458	534	559	254
75°	132	239	356	432	456	142
85°	30	142	260	333	356	35
90°	0	107	221	293	316	2
95°	0	85	195	263	286	0
105°	0	50	142	204	223	0
115°	0	20	96	151	168	0
125°	0	2	54	100	115	0
135°	0	0	17	53	67	0
145°	0	0	0	9	19	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: P231601

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	812.6	812.6	812.6	812.6	812.6	812.6	812.6	812.6	812.6	812.6	812.6
2.5°	818.8	815.7	812.6	814.1	814.1	815.7	812.6	812.6	809.4	806.3	806.3
5°	815.7	812.6	807.9	809.4	809.4	811.0	809.4	807.9	804.8	801.7	803.2
7.5°	809.4	806.3	801.7	803.2	803.2	803.2	803.2	803.2	801.7	800.1	801.7
10°	800.1	797.0	793.9	793.9	793.9	797.0	797.0	798.5	798.5	798.5	801.7
12.5°	789.2	786.1	783.0	783.0	784.5	789.2	790.8	792.3	793.9	793.9	797.0
15°	776.8	772.1	769.0	772.1	773.6	779.9	783.0	784.5	786.1	787.6	792.3
17.5°	761.2	758.1	753.4	756.5	761.2	769.0	772.1	775.2	778.3	778.3	784.5
20°	744.1	741.0	736.3	742.5	748.7	755.0	759.6	762.7	765.9	769.0	775.2
22.5°	725.4	720.7	719.2	726.9	733.2	741.0	745.6	750.3	753.4	758.1	765.9
25°	705.1	700.5	700.5	708.3	716.0	723.8	730.1	736.3	739.4	745.6	753.4
27.5°	683.4	678.7	680.2	689.6	695.8	706.7	712.9	720.7	725.4	731.6	741.0
30°	658.4	653.8	656.9	667.8	677.1	688.0	695.8	702.0	709.8	717.6	728.5
32.5°	635.1	628.9	633.5	646.0	655.3	667.8	677.1	684.9	694.3	703.6	714.5
35°	608.6	604.0	610.2	622.6	633.5	646.0	656.9	666.2	677.1	688.0	700.5
37.5°	582.2	575.9	585.3	597.7	611.8	624.2	636.7	646.0	658.4	672.5	686.5
40°	554.2	549.5	560.4	574.4	586.8	600.9	614.9	625.8	641.3	655.3	670.9
42.5°	527.7	523.0	535.5	547.9	563.5	579.1	594.6	605.5	622.6	639.8	655.3
45°	498.1	495.0	507.5	523.0	540.1	557.3	571.3	586.8	605.5	622.6	639.8
47.5°	468.5	465.4	479.4	496.6	513.7	532.4	549.5	568.2	586.8	605.5	622.6
50°	437.4	437.4	453.0	470.1	487.2	509.0	526.1	547.9	566.6	586.8	604.0
52.5°	409.4	409.4	425.0	442.1	462.3	484.1	505.9	526.1	547.9	566.6	586.8
55°	378.3	381.4	398.5	415.6	435.9	459.2	482.6	504.3	527.7	547.9	566.6
57.5°	348.7	353.4	368.9	387.6	410.9	435.9	459.2	482.6	504.3	526.1	546.4
60°	317.6	323.8	340.9	361.1	384.5	410.9	435.9	459.2	482.6	505.9	524.6
62.5°	286.4	294.2	311.3	331.6	358.0	384.5	410.9	434.3	459.2	481.0	501.2
65°	256.8	264.6	281.7	303.5	331.6	359.6	386.0	410.9	435.9	457.6	479.4
67.5°	227.3	235.0	253.7	277.1	305.1	333.1	359.6	386.0	410.9	432.7	453.0
70°	193.0	205.5	224.2	249.1	278.6	306.7	334.7	359.6	384.5	409.4	429.6
72.5°	165.0	175.9	196.1	222.6	250.6	280.2	308.2	334.7	359.6	382.9	403.2
75°	132.3	144.8	166.6	194.6	224.2	253.7	281.7	308.2	333.1	356.5	378.3
77.5°	104.3	116.7	140.1	168.1	197.7	227.3	256.8	283.3	308.2	331.6	351.8
80°	77.8	90.3	115.2	143.2	174.3	203.9	231.9	258.4	283.3	306.7	326.9
82.5°	52.9	65.4	91.8	119.9	149.4	179.0	207.0	233.5	258.4	281.7	303.5
85°	29.6	45.1	70.0	98.1	127.6	157.2	185.2	213.3	236.6	260.0	281.7
87.5°	12.5	29.6	52.9	79.4	109.0	138.5	166.6	191.5	217.9	239.7	260.0
90°	0.0	15.6	37.4	63.8	93.4	121.4	149.4	174.3	199.2	221.0	241.3
92.5°	0.0	9.3	29.6	54.5	82.5	110.5	137.0	163.4	186.8	208.6	228.8
95°	0.0	4.7	21.8	46.7	71.6	98.1	124.5	149.4	172.8	194.6	213.3
97.5°	0.0	1.6	17.1	37.4	62.3	88.7	113.6	138.5	160.3	180.6	199.2
100°	0.0	0.0	12.5	31.1	54.5	77.8	102.7	126.1	147.9	166.6	185.2
102.5°	0.0	0.0	6.2	24.9	46.7	68.5	91.8	113.6	135.4	154.1	172.8
105°	0.0	0.0	3.1	18.7	38.9	60.7	82.5	102.7	123.0	141.7	160.3
107.5°	0.0	0.0	0.0	12.5	31.1	51.4	73.2	93.4	113.6	130.8	146.3
110°	0.0	0.0	0.0	7.8	24.9	43.6	63.8	82.5	101.2	118.3	135.4



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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	3.1	18.7	35.8	54.5	73.2	90.3	107.4	123.0
115°	0.0	0.0	0.0	0.0	12.5	28.0	46.7	63.8	80.9	96.5	112.1
117.5°	0.0	0.0	0.0	0.0	6.2	21.8	37.4	54.5	70.0	85.6	99.6
120°	0.0	0.0	0.0	0.0	1.6	15.6	29.6	46.7	60.7	76.3	88.7
122.5°	0.0	0.0	0.0	0.0	0.0	7.8	21.8	37.4	51.4	65.4	77.8
125°	0.0	0.0	0.0	0.0	0.0	3.1	15.6	28.0	42.0	54.5	68.5
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	7.8	20.2	32.7	45.1	57.6
130°	0.0	0.0	0.0	0.0	0.0	0.0	3.1	12.5	24.9	35.8	46.7
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	15.6	26.5	35.8
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.8	17.1	26.5
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.3	17.1
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	9.3
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
145°	0.0	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°	812.6	812.6	812.6	812.6	812.6	812.6	812.6	812.6
2.5°	809.4	811.0	812.6	811.0	811.0	812.6	811.0	809.4
5°	806.3	807.9	809.4	809.4	811.0	811.0	809.4	807.9
7.5°	806.3	809.4	811.0	812.6	812.6	814.1	812.6	811.0
10°	806.3	807.9	811.0	812.6	812.6	814.1	812.6	811.0
12.5°	803.2	806.3	809.4	809.4	811.0	812.6	811.0	809.4
15°	797.0	800.1	804.8	806.3	807.9	807.9	806.3	806.3
17.5°	790.8	793.9	798.5	800.1	801.7	803.2	801.7	801.7
20°	781.4	786.1	790.8	793.9	795.4	797.0	797.0	795.4
22.5°	772.1	778.3	783.0	784.5	787.6	790.8	789.2	789.2
25°	761.2	767.4	773.6	776.8	779.9	783.0	781.4	781.4
27.5°	750.3	756.5	762.7	767.4	772.1	773.6	773.6	773.6
30°	736.3	745.6	751.8	756.5	761.2	764.3	764.3	764.3
32.5°	723.8	733.2	741.0	745.6	751.8	755.0	756.5	756.5
35°	711.4	720.7	730.1	736.3	742.5	747.2	747.2	748.7
37.5°	697.4	709.8	719.2	726.9	733.2	737.8	739.4	737.8
40°	684.9	697.4	706.7	716.0	722.3	726.9	728.5	728.5
42.5°	669.3	683.4	694.3	703.6	711.4	716.0	717.6	717.6
45°	655.3	669.3	681.8	691.1	697.4	702.0	705.1	705.1
47.5°	639.8	653.8	664.7	675.6	683.4	688.0	689.6	691.1
50°	622.6	636.7	647.6	660.0	667.8	672.5	674.0	675.6
52.5°	604.0	618.0	632.0	642.9	650.7	656.9	658.4	658.4
55°	585.3	599.3	613.3	624.2	633.5	638.2	641.3	642.9
57.5°	563.5	579.1	593.1	605.5	613.3	619.5	622.6	622.6
60°	543.3	558.8	572.8	585.3	593.1	599.3	600.9	604.0
62.5°	519.9	535.5	551.0	561.9	569.7	575.9	579.1	580.6
65°	496.6	513.7	529.3	538.6	546.4	554.2	557.3	558.8
67.5°	471.7	488.8	502.8	515.2	521.5	529.3	532.4	532.4
70°	448.3	465.4	477.9	488.8	498.1	504.3	507.5	509.0
72.5°	423.4	439.0	453.0	463.9	471.7	477.9	482.6	482.6
75°	395.4	412.5	426.5	437.4	446.7	453.0	456.1	456.1
77.5°	372.0	387.6	400.1	412.5	421.8	428.1	431.2	432.7
80°	345.6	361.1	375.1	386.0	395.4	401.6	404.7	406.3
82.5°	322.2	337.8	350.2	362.7	370.5	376.7	379.8	381.4
85°	298.9	314.4	328.4	337.8	347.1	351.8	356.5	356.5
87.5°	278.6	292.6	306.7	316.0	325.3	331.6	334.7	334.7
90°	258.4	274.0	286.4	298.9	306.7	312.9	314.4	316.0
92.5°	244.4	260.0	272.4	283.3	291.1	295.8	300.4	300.4
95°	230.4	244.4	258.4	267.7	275.5	281.7	284.9	286.4
97.5°	216.4	230.4	242.8	252.2	260.0	266.2	267.7	269.3
100°	202.4	216.4	227.3	236.6	244.4	249.1	253.7	253.7
102.5°	188.4	202.4	213.3	222.6	230.4	235.0	238.2	238.2
105°	174.3	188.4	199.2	208.6	214.8	221.0	222.6	222.6
107.5°	161.9	175.9	186.8	194.6	200.8	207.0	210.1	210.1
110°	149.4	161.9	172.8	180.6	188.4	193.0	196.1	196.1



TEST NUMBER: P231601

CATALOG NUMBER: S121-DR-2-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	137.0	149.4	160.3	168.1	174.3	179.0	182.1	182.1
115°	124.5	137.0	146.3	155.7	161.9	166.6	168.1	168.1
117.5°	113.6	124.5	133.9	141.7	147.9	152.5	155.7	155.7
120°	101.2	112.1	121.4	129.2	135.4	138.5	141.7	141.7
122.5°	90.3	99.6	109.0	116.7	121.4	126.1	129.2	127.6
125°	79.4	88.7	96.5	104.3	109.0	113.6	115.2	115.2
127.5°	66.9	76.3	85.6	91.8	96.5	101.2	102.7	102.7
130°	56.0	65.4	73.2	79.4	84.1	87.2	90.3	90.3
132.5°	46.7	54.5	62.3	66.9	71.6	74.7	77.8	77.8
135°	35.8	43.6	49.8	56.0	60.7	63.8	65.4	66.9
137.5°	24.9	32.7	38.9	45.1	48.3	51.4	52.9	52.9
140°	15.6	21.8	28.0	32.7	35.8	38.9	40.5	42.0
142.5°	6.2	12.5	17.1	21.8	24.9	26.5	28.0	28.0
145°	0.0	3.1	7.8	10.9	14.0	17.1	17.1	18.7
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)