

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: LUMIERE

Report Number: P14013

Luminaire Tested: **650-4-10LED3012-12-NSS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P14013
Test Lab: INNOVATION CENTER-P1
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: LUMIERE
Catalog Number: 650-4-10LED3012-12-NSS
Description: LUMIERE BOCA 650 MARKER
Light Source: [3] TERRALUX 3000K SPOT LEDS
TLM-R16BA353012B-B000
Ballast/Driver: [1] CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 61604
IN0004

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 34.2 lumens
Efficiency: N/A
Efficacy: 3.7 lumens/watt
Spacing Criteria (0/90/45): - / - / -
Luminous Opening: Rectangular w/ Sides (W: 0.15' x L: 0.08' x H: 0.03')
CIE Type: Semi-Indirect

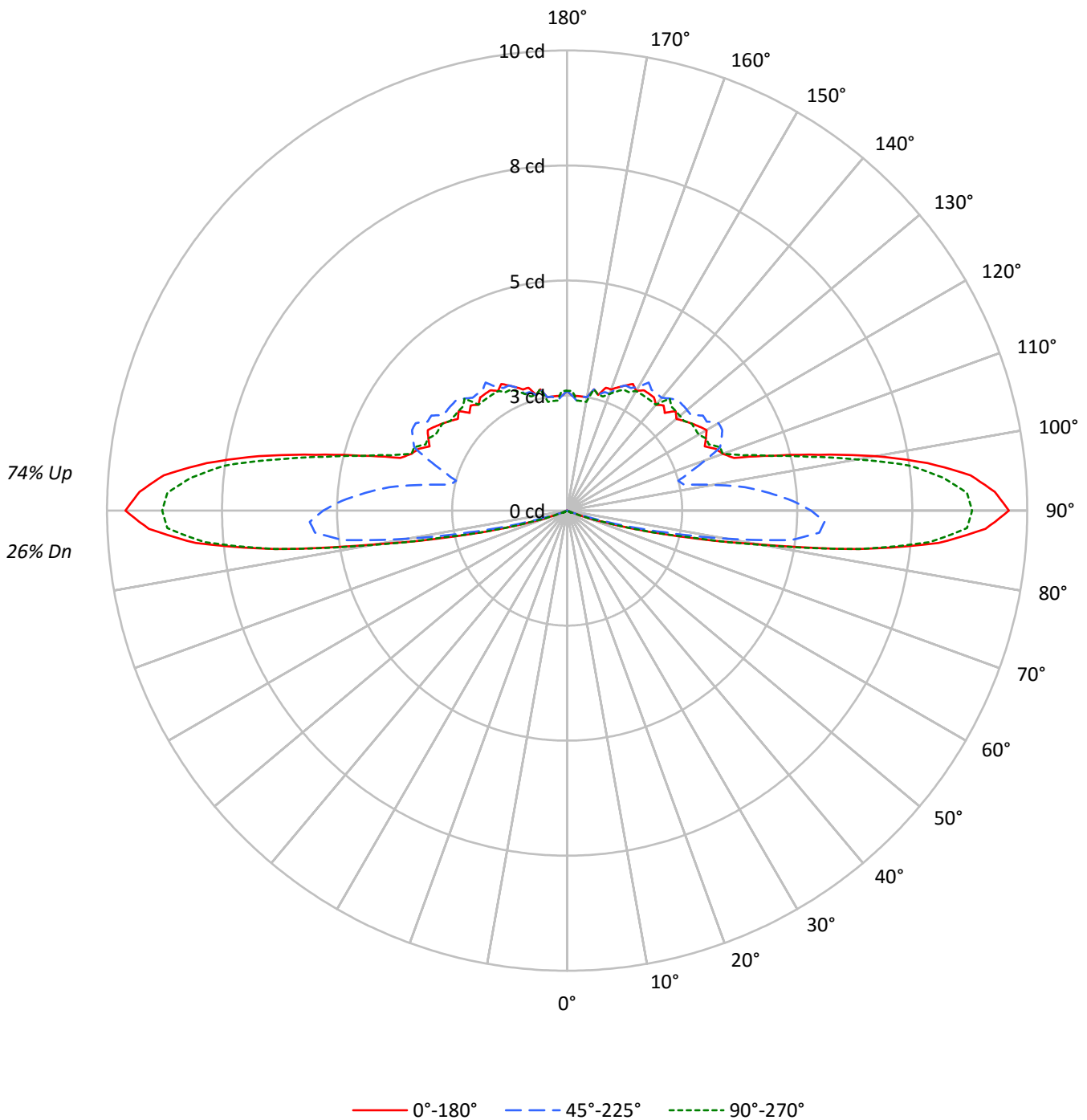
Input Watts (W): 9.3
Input Voltage (V): NR
Input Current (Ain): 0.82268
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: 15 HR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	101	101	101	101	90	90	90	90	70	70	70	51	51	51	34	34	34	26
1	84	77	70	64	74	67	61	56	49	45	41	33	29	26	17	15	13	5
2	75	65	57	49	66	57	49	43	41	36	31	27	23	19	13	11	8	2
3	68	57	47	40	59	49	41	35	36	30	25	23	19	15	11	9	6	1
4	62	50	40	33	54	43	35	29	32	26	21	20	16	13	10	7	5	0
5	57	44	35	28	50	39	31	25	28	22	18	18	14	11	9	6	4	0
6	53	39	30	24	46	34	27	21	25	19	15	17	12	9	8	6	4	0
7	48	35	27	21	42	31	24	18	23	17	13	15	11	8	8	5	3	0
8	45	32	24	18	39	28	21	16	21	15	11	14	10	7	7	5	3	0
9	42	29	21	16	36	26	19	14	19	14	10	13	9	6	7	4	2	0
10	39	26	19	14	34	23	17	12	17	12	9	12	8	6	6	4	2	0

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	0	0	0
5°	0	0	0
10°	0	0	0
15°	0	0	0
20°	0	0	0
25°	0	0	0
30°	0	0	0
35°	0	0	0
40°	0	0	0
45°	0	0	0
50°	0	0	0
55°	0	0	0
60°	0	0	0
65°	0	0	0
70°	510	241	652
75°	2282	1607	3042
80°	6851	5308	9901
85°	15572	9699	23275



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	0.0	0.0
10°-20°	0.0	0.0
20°-30°	0.0	0.0
30°-40°	0.0	0.0
40°-50°	0.0	0.0
50°-60°	0.0	0.0
60°-70°	0.1	0.2
70°-80°	1.7	5.1
80°-90°	7.0	20.3
90°-100°	7.5	22.0
100°-110°	4.5	13.1
110°-120°	3.6	10.4
120°-130°	3.1	8.9
130°-140°	2.5	7.3
140°-150°	2.0	5.7
150°-160°	1.4	4.0
160°-170°	0.8	2.2
170°-180°	0.2	0.7
0°-30°	0.0	0.0
0°-40°	0.0	0.0
0°-60°	0.0	0.0
0°-90°	8.8	25.6
90°-120°	15.6	45.6
90°-150°	23.1	67.5
90°-180°	25.0	73.0
0°-180°	34.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	0	0	0	0	0	
5°	0	0	0	0	0	0
15°	0	0	0	0	0	0
25°	0	0	0	0	0	0
35°	0	0	0	0	0	0
45°	0	0	0	0	0	0
55°	0	0	0	0	0	0
65°	0	0	0	0	0	0
75°	2	1	1	1	2	2
85°	8	7	6	7	8	6
90°	10	8	5	8	9	5
95°	9	8	4	7	8	7
105°	5	5	2	4	5	5
115°	3	4	4	4	3	3
125°	3	3	4	3	3	3
135°	3	3	3	3	3	2
145°	3	3	3	3	3	2
155°	3	3	3	3	3	1
165°	3	3	3	3	3	1
175°	2	2	2	2	2	0
180°	3	3	3	3	3	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62.5°	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0
65°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.5°	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
70°	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.2	0.1	0.2	0.3
72.5°	0.8	0.7	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.4	0.5
75°	1.6	1.6	1.6	1.4	1.5	1.3	1.2	1.2	1.2	1.2	1.2
77.5°	2.7	2.5	2.6	2.4	2.4	2.2	2.2	2.1	2.1	2.2	2.2
80°	4.2	4.2	4.2	4.2	3.9	3.8	3.8	3.8	3.7	3.5	3.5
82.5°	6.4	6.3	6.1	6.0	5.7	5.5	5.3	5.1	5.0	4.9	4.8
85°	8.1	8.0	7.8	7.4	7.1	6.8	6.5	6.0	5.8	5.5	5.4
87.5°	9.1	9.0	8.8	8.4	8.1	7.5	7.1	6.4	6.1	5.6	5.6
90°	9.6	9.4	9.2	8.8	8.5	8.0	7.3	6.5	5.8	5.3	5.4
92.5°	9.3	9.3	9.2	8.9	8.6	7.9	7.3	6.3	5.6	4.9	5.1
95°	8.8	8.7	8.6	8.4	8.1	7.6	6.8	6.0	5.1	4.4	4.6
97.5°	7.9	7.9	7.8	7.7	7.6	7.0	6.3	5.4	4.5	3.9	4.1
100°	6.8	6.8	6.7	6.6	6.5	6.1	5.5	4.6	3.7	3.2	3.5
102.5°	5.6	5.5	5.5	5.5	5.4	5.2	4.7	4.0	3.1	2.6	3.0
105°	4.6	4.7	4.6	4.6	4.6	4.6	4.2	3.5	2.8	2.5	2.8
107.5°	3.8	3.9	4.0	3.9	3.9	4.0	3.8	3.5	3.0	2.8	3.0
110°	3.6	3.5	3.5	3.6	3.7	3.6	3.8	3.5	3.3	3.2	3.2



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CATALOG NUMBER: 650-4-10LED3012-12-NSS

CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	3.5	3.4	3.5	3.5	3.6	3.7	3.8	3.8	3.7	3.6	3.6
115°	3.3	3.4	3.5	3.5	3.6	3.6	3.7	3.8	3.8	3.7	3.6
117.5°	3.4	3.4	3.4	3.6	3.6	3.7	3.7	3.9	3.8	3.8	3.8
120°	3.5	3.4	3.4	3.5	3.5	3.5	3.6	3.8	3.7	3.8	3.7
122.5°	3.4	3.4	3.3	3.4	3.5	3.5	3.6	3.6	3.6	3.6	3.7
125°	3.3	3.3	3.4	3.4	3.3	3.4	3.5	3.5	3.6	3.6	3.6
127.5°	3.2	3.1	3.2	3.2	3.3	3.4	3.4	3.4	3.5	3.4	3.4
130°	3.1	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.4	3.4	3.4
132.5°	3.2	3.2	3.2	3.2	3.2	3.3	3.4	3.4	3.4	3.4	3.4
135°	3.0	3.2	3.2	3.2	3.3	3.2	3.3	3.3	3.4	3.4	3.4
137.5°	3.1	3.1	3.1	3.2	3.2	3.3	3.4	3.3	3.4	3.3	3.3
140°	3.0	3.0	3.0	3.0	3.1	3.0	3.2	3.1	3.2	3.2	3.2
142.5°	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.3	3.4	3.2	3.2
145°	3.1	3.0	3.0	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.2
147.5°	3.1	3.0	3.1	3.1	3.1	3.2	3.2	3.1	3.2	3.3	3.2
150°	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.0	3.1	3.1	3.0
152.5°	3.1	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.0	3.0
155°	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	3.0	3.0	2.9
157.5°	2.9	3.0	2.9	2.9	2.9	3.0	2.9	2.9	2.9	2.9	2.9
160°	2.8	2.7	2.8	2.8	2.8	2.8	2.8	2.7	2.8	2.7	2.7
162.5°	2.8	2.7	2.7	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.6
165°	2.6	2.7	2.6	2.7	2.6	2.6	2.7	2.7	2.6	2.6	2.7
167.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6
170°	2.5	2.5	2.4	2.4	2.5	2.5	2.5	2.4	2.4	2.5	2.4
172.5°	2.5	2.6	2.6	2.6	2.6	2.5	2.5	2.6	2.6	2.5	2.5
175°	2.5	2.5	2.5	2.5	2.5	2.4	2.5	2.5	2.5	2.4	2.5
177.5°	2.5	2.5	2.6	2.6	2.5	2.5	2.6	2.5	2.5	2.5	2.6
180°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60°	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
62.5°	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1
65°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.5°	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
70°	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.4
72.5°	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8
75°	1.2	1.2	1.3	1.4	1.5	1.6	1.6	1.6
77.5°	2.1	2.3	2.3	2.5	2.5	2.6	2.7	2.6
80°	3.6	3.7	3.7	3.9	4.0	4.2	4.2	4.3
82.5°	4.9	5.0	5.2	5.5	5.8	6.1	6.2	6.4
85°	5.6	5.8	6.3	6.8	7.1	7.6	7.8	7.9
87.5°	5.9	6.4	7.0	7.7	8.1	8.5	8.7	8.7
90°	5.8	6.6	7.3	8.0	8.5	8.7	9.0	8.8
92.5°	5.7	6.6	7.3	8.0	8.3	8.8	8.7	8.7
95°	5.3	6.2	7.0	7.6	8.0	8.2	8.2	8.2
97.5°	4.8	5.7	6.5	7.2	7.3	7.5	7.4	7.5
100°	4.2	5.0	5.8	6.2	6.4	6.3	6.4	6.4
102.5°	3.6	4.3	4.9	5.2	5.3	5.3	5.4	5.4
105°	3.4	4.0	4.4	4.4	4.4	4.5	4.5	4.6
107.5°	3.3	3.7	3.9	3.8	3.9	4.0	3.9	4.0
110°	3.4	3.6	3.6	3.7	3.6	3.6	3.6	3.6



TEST NUMBER: P14013

CATALOG NUMBER: 650-4-10LED3012-12-NSS

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
115°	3.7	3.6	3.5	3.6	3.4	3.4	3.4	3.4
117.5°	3.7	3.7	3.6	3.5	3.6	3.5	3.4	3.4
120°	3.6	3.6	3.5	3.4	3.4	3.4	3.3	3.3
122.5°	3.6	3.6	3.5	3.4	3.4	3.4	3.4	3.3
125°	3.5	3.4	3.4	3.4	3.3	3.3	3.3	3.3
127.5°	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.2
130°	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2
132.5°	3.4	3.3	3.2	3.3	3.2	3.3	3.2	3.2
135°	3.3	3.2	3.3	3.2	3.2	3.2	3.1	3.2
137.5°	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.3
140°	3.1	3.1	3.1	3.0	3.0	3.0	3.0	3.0
142.5°	3.2	3.3	3.2	3.1	3.2	3.1	3.1	3.0
145°	3.2	3.2	3.1	3.1	3.0	3.0	3.0	3.0
147.5°	3.1	3.1	3.1	3.1	3.1	3.0	3.1	3.0
150°	3.0	3.0	3.0	3.0	3.0	2.9	2.9	3.0
152.5°	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9
155°	2.9	2.9	3.0	2.9	3.0	2.9	2.9	2.9
157.5°	3.0	2.9	2.8	2.8	2.9	2.9	2.8	2.8
160°	2.7	2.8	2.8	2.7	2.6	2.7	2.8	2.7
162.5°	2.7	2.7	2.7	2.6	2.6	2.7	2.7	2.6
165°	2.6	2.7	2.7	2.7	2.6	2.6	2.6	2.6
167.5°	2.7	2.7	2.7	2.7	2.6	2.7	2.7	2.7
170°	2.5	2.4	2.4	2.4	2.4	2.5	2.4	2.4
172.5°	2.6	2.5	2.5	2.5	2.5	2.6	2.5	2.4
175°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4
177.5°	2.5	2.6	2.6	2.6	2.6	2.6	2.5	2.6
180°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6

(END OF REPORT)